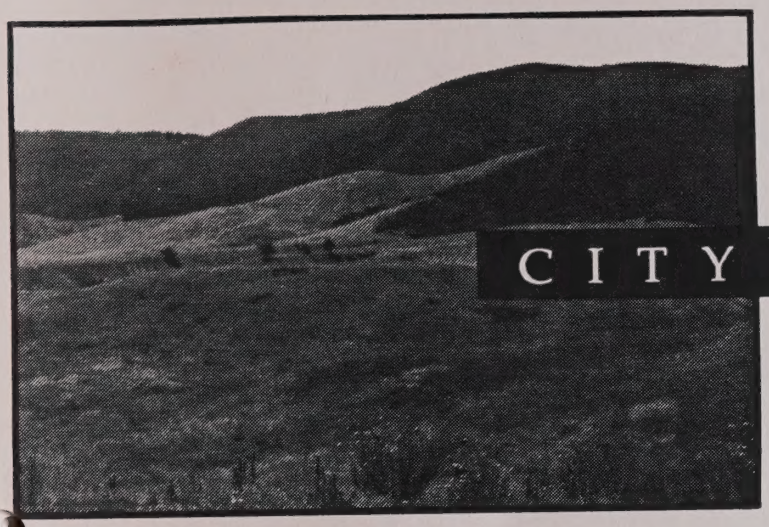


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

MEA

Revised No._____
Date 1-10-94

OCTOBER 28, 1992

CITY OF MURRIETA
MASTER ENVIRONMENTAL ASSESSMENT
TABLE OF CONTENTS

Chapter		Page
1.	**INTRODUCTION**	**1-1**
	Purpose of the Document	1-1
	Organization of the Document	1-2
	The Murrieta MEA Study Area	1-2
	Overview of Environmental Setting	1-7
2.	**SUMMARY OF ENVIRONMENTAL ISSUES**	**2-1**
3.	**ENVIRONMENTAL ASSESSMENT**	
3.	Introduction to the Environmental Assessment	3-1
3.1	Geology, Soils and Seismicity	3.1-1
3.2	Hydrology and Water Quality	3.2-1
3.3	Biological Resources	3.3-1
3.4	Land Use	3.4-1
3.5	Population and Housing	3.5-1
3.6	Economics	3.6-1
3.7	Utilities	3.7-1
3.8	Public Services	3.8-1
3.9	Transportation/Circulation	3.9-1
3.10	Air Quality	3.10-1
3.11	Noise	3.11-1
3.12	Health and Safety (Risk of Upset)	3.12-1
3.13	Aesthetics/Views	3.13-1
3.14	Light and Glare	3.14-1
3.15	Cultural Resources	3.15-1
4.	**REPORT PREPARATION**	4-1

LIST OF TABLES

Table		Page
3.2-1	Murrieta Creek Area Drainage Plan Fee Distribution	3.2-10
3.2-2	Water Quality Standards: Constituent Concentrations	3.2-15
3.3-1	Special Status Species Reported from the Murrieta MEA Vicinity	3.3-9
3.3-2	List of Sensitive Species Found in the Chaparral and Coastal Sage Scrub Communities in the Santa Rosa Plateau Ecological Reserve	3.3-12
3.4-1	Existing Land Use Inventory Area Calculations	3.4-2
3.4-2	Existing Land Use Inventory Category Criteria	3.4-3
3.5-1	Regional Population Growth Comparisons	3.5-1
3.5-2	Population By Ethnicity By Plan Area	3.5-2
3.5-3	Occupational Characteristics of Murrieta 1980	3.5-5
3.5-4	Household Characteristics 1980 - 1990	3.5-6
3.5-5	Income Distribution of Murrieta, 1991	3.5-7
3.5-6	Housing Unit Type of Study Area 1980 and 1990	3.5-8
3.5-7	Age of Murrieta's Housing Stack	3.5-8
3.5-8	Vacancy Status of Murrieta, 1990	3.5-9
3.5-9	Monthly Housing Costs of Murrieta - 1992	3.5-10
3.5-10	Affordable Housing	3.5-11
3.6-1	Employment Growth Trends of Southern California	3.6-2
3.6-2	Population, Housing and Employment Growth Ratios	3.6-2
3.6-3	Taxable Retail Sales	3.6-3
3.6-4	Nonresidential Development, 1980 - 1991	3.6-3
3.6-5	Retail Centers in Murrieta	3.6-4
3.6-6	Office Space in the City of Murrieta and Vicinity, 1992	3.6-7
3.6-7	Industrial Space - 1992	3.6-9
3.8-1	Murrieta Fire Protection District Station Locations, Equipment, and Staffing	3.8-5
3.8-2	Murrieta Unified School District Schools	3.8-11
3.8-3	Murrieta Valley Unified School District Planned School Facilities	3.8-13
3.8-4	Student Generation Factors For New Housing	3.8-13
3.8-5	Park Facilities Inventory	3.8-20
3.9-1	Capacity Valves	3.9-13
3.9-2	Intersection Analysis for Existing Conditions	3.9-16

LIST OF TABLES (Continued)

3.10-1 Federal and State Ambient Air Quality Standards 3.10-4
3.10-2 Health Effects Summary of the Criteria Air Pollutants 3.10-6
3.10-3 Air Pollutant Data Summary 1988 - 1991 . . . . . 3.10-13
3.10-4 Summary of AQMP Control Measures 3.10-16
3.10-5 Sensitive Receptors of Air Contaminants 3.10-20

3.11-1 Sound Levels and Human Response 3.11-3
3.11-2 Noise Service Categories 3.11-5
3.11-3 Noise Monitoring Results 3.11-9
3.11-4 Typical Traffic Noise Levels 3.11-15
3.11-5 Existing Roadside Noise Levels/CNEL Contour Distances 3.11-16
3.11-6 Airport Land Use Guidelines for Noise Compatibility 3.11-20
3.11-7 Typical Construction Equipment Noise (dBA) 3.11-23

3.12-1 California Division of Forestry and Fire Protection Station Locations, Equipment and Staffing 3.12-5

3.15-1 Historical Sites and Structures Inventory 3.15-4
3.15-2 Unnamed Sandstone Composite Taxa 3.15-15
3.15-3 Pauba Formation Composite Taxa 3.15-17

LIST OF FIGURES

Figure		Page
1-1	Location Map	1-3
1-2	MEA Study Area	1-5
3.1-1	Topographic Map	3.1-3
3.1-2	Geologic Formations	3.1-5
3.1-3	Alquist Priolo Special Studies Zones	3.1-9
3.1-4	Regional Fault Locations	3.1-11
3.1-5	Liquefaction Hazard Zone	3.1-17
3.1-6	Subsidence Hazard Zone	3.1-21
3.1-7	Special Geologic Report Zone	3.1-23
3.2-1	FEMA Flood Zone Map	3.2-5
3.2-2	Lake Skinner Potential Dam Inundation Area	3.2-11
3.3-1	Murrieta Biological Communities	3.3-3
3.4-1	Vacant and Underdeveloped Land.	3.4-5
3.4-2	City Areas and Sphere of Influence	3.4-7
3.4-3	Existing Land Use Inventory City Area West of I-15	3.4-11
3.4-4	Existing Land Use Inventory City Area I-15 to I-215	3.4-13
3.4-5	Existing Land Use Inventory City Area East of I-215	3.4-17
3.4-6	Existing Land Use Inventory Sphere of Influence (North Half)	3.4-19
3.4-7	Existing Land Use Inventory Sphere of Influence (South Half)	3.4-21
3.4-8	Approved Specific Plans	3.4-25
3.5-1	Murrieta Age Groups	3.5-3
3.5-2	Murrieta 1990 Population	3.5-4
3.6-1	Existing Retail Center Locations	3.6-5
3.6-2	Existing Office Projects	3.6-8
3.7-1	Boundary Limits	3.7-3
3.7-2	Eastern Municipal Water District Existing Water Facilities	3.7-9
3.7-3	Elsinore Valley Municipal Water District Existing Water Facilities	3.7-11
3.7-4	Rancho California Existing Reclaimed Water Lines	3.7-13
3.7-5	Murrieta County Water District Existing Water Facilities	3.7-15
3.7-6	Rancho California Water District Existing Water Facilities	3.7-19
3.7-7	Eastern Municipal Existing Sewer Facilities	3.7-25
3.7-8	Rancho California Water District Existing Sewer Facilities	3.7-27
3.7-9	Utilities Map	3.7-35

LIST OF FIGURES (Continued)

3.8-1 Fire Stations and Service Areas 3.8-3
3.8-2 School Districts Boundaries and Facilities 3.8-9
3.8-3 Park Locations and Service Areas 3.8-21
3.8-4 Potential Trails Map 3.8-29

3.9-1 Number of Through Lanes 3.9-5
3.9-2 Intersection Controls 3.9-7
3.9-3 Average Daily Traffic (ADT) 3.9-9
3.9-4 Daily Volume To Capacity Ratios 3.9-11
3.9-5 Intersection Service Levels 3.9-19
3.9-6 Riverside County General Plan Circulation Element 3.9-21
3.9-7 Riverside County Roadway Cross-Section 3.9-23
3.9-8 ACTS Circulation Recommendations 3.9-25
3.9-9 North Murrieta Traffic Model Recommendations 3.9-30

3.10-1 Wind Patterns Maps 3.10-2
3.10-2 Regional Ozone Levels 3.10-8
3.10-3 Regional Carbon Monoxide Levels 3.10-9
3.10-4 Regional Nitrogen Dioxide Levels 3.10-10
3.10-5 Regional PM10 Levels 3.10-11
3.10-6 Local Ozone & PM10 Levels 3.10-14
3.10-7 Sensitive Receptors 3.10-21

3.11-1 Existing CNEL Noise Contours 3.11-7
3.11-2 Noise Monitoring Locations 3.11-11
3.11-3 Noise Sensitive Receptors 3.11-13

3.12-1 Wildland Fire Protection Agreement Areas 3.12-3
3.12-2 Airport Influence Area and Safety Zones 3.12-9
3.12-3 Emergency Management Organizational Chart 3.12-13

3.13-1 Photo Key Map 3.13-3
3.13-2 Photos A & B 3.13-5
3.13-3 Photos C & D 3.13-7
3.13-4 Photos E & F 3.13-9

3.15-1 Historic Sites and Structures Map Inset 3.15-5
3.15-2 Historic Structures Map 3.15-7
3.15-3 Paleontological Sensitivity 3.15-13

INTRODUCTION

CHAPTER 1

1. INTRODUCTION

This Master Environmental Assessment (MEA) provides a description of existing natural and man-made conditions in the city of Murrieta and its sphere of influence (the MEA study area). The MEA establishes the overall environmental characteristics of the study area, identifying infrastructure capacities and aspects of the natural environment that influence quality of life, growth, and the form of development. The following issues are analyzed in the MEA:

- Earth Resources
- Water Resources
- Air Quality
- Biological Resources
- Noise
- Health & Safety
- Transportation & Circulation
- Population & Housing
- Economic Conditions
- Public Services
- Utilities
- Cultural Resources
- Aesthetics/Views

PURPOSE OF THE DOCUMENT

The California Environmental Quality Act (CEQA) Guidelines, Section 15169, establishes that a public agency may prepare a MEA to provide information that may be used or referenced in Environmental Impact Reports (EIRs) or Negative Declarations. The CEQA guidelines suggest preparation of an MEA as an approach to identify and organize environmental information, but do not specify the content, format, or procedures to be used. The CEQA guidelines do suggest the following uses for a MEA (15169.6(d)):

- To identify the environmental characteristics and constraints of an area. This information can be used to influence the design and location of individual projects.

- To assist in formulating a general plan or any element of such a plan by identifying environmental characteristics and constraints that need to be addressed in the general plan.

- To provide information that agencies can use in initial studies to decide whether certain environmental effects are likely to occur and whether certain effects will be significant.

- To provide a source of current information for use and reference in preparing EIRs and Negative Declarations.

- To serve as a reference document to assist public agencies which review other environmental documents dealing with activities in the area covered by the assessment. The public agency preparing the assessment should forward a completed copy to each agency which will review projects in the area.

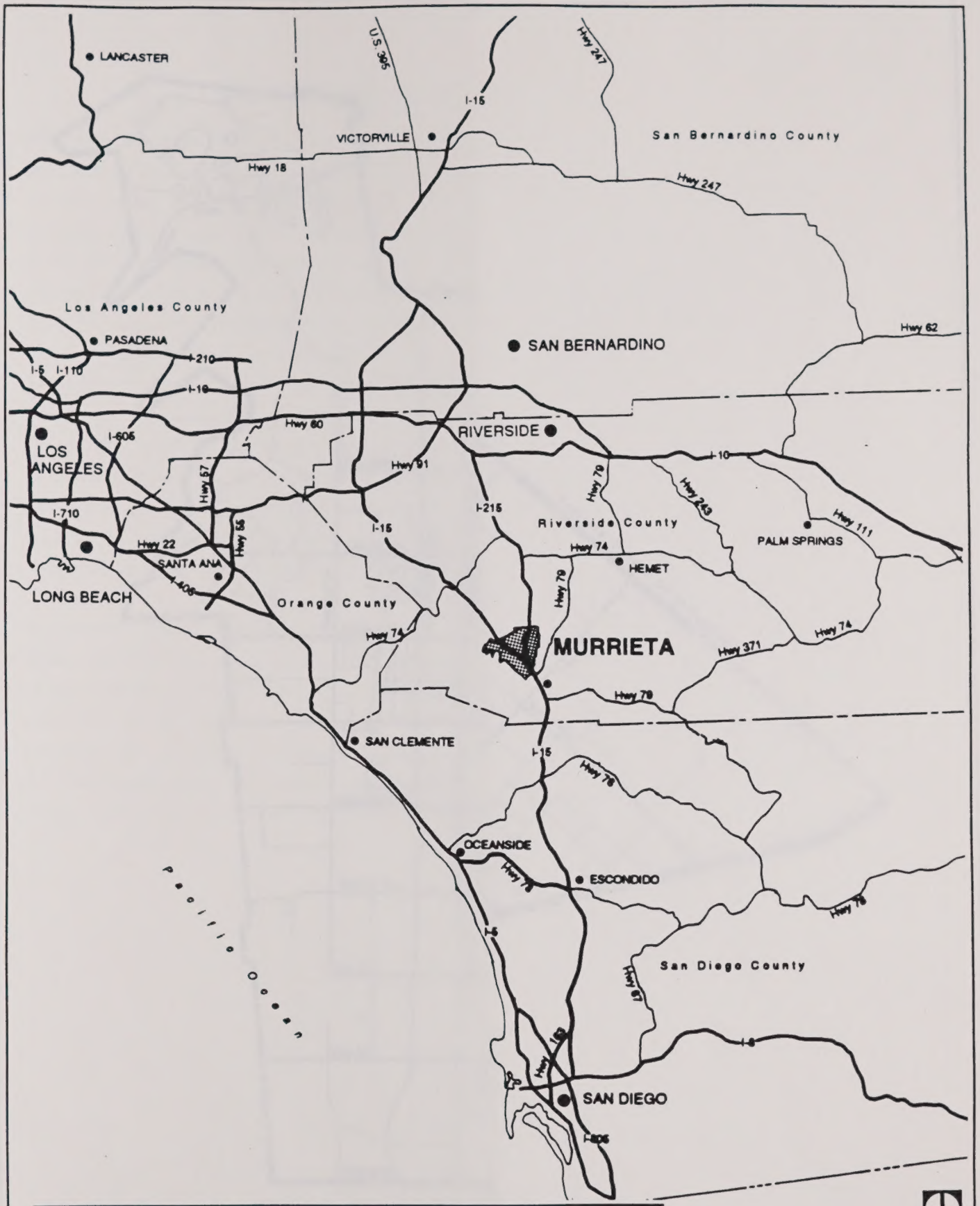
The city of Murrieta will use the document in the development and maintenance of the General Plan, and to provide baseline data for future EIRs and other projects requiring environmental review. The MEA will provide a comprehensive source of information in a form that can be easily used and referenced in preparing initial studies to help the city determine whether individual development projects require preparation of an EIR. The MEA, if updated annually to respond to changing conditions in the city and the region, will also assist in determining public service and infrastructure needs and constraints on an ongoing basis.

ORGANIZATION OF THE DOCUMENT

The MEA begins in this chapter with a description of the study area and an overview of the city's environmental setting. Chapter Two of the document presents a brief summary of existing conditions and issues for each of the topical areas that are analyzed in Chapter Three. Chapter Three addresses each environmental topic separately, with an assessment of existing environmental conditions, which includes discussion of methodology, related documents and regulations, key issues, and where appropriate, regional considerations. Chapter Four lists information sources, and Chapter Five lists those involved in preparation of the document.

THE MURRIETA MEA STUDY AREA

The city of Murrieta, incorporated July 1, 1991, encompasses approximately 26.5 square miles in the southwest portion of Riverside County. The city is bordered by the city of Temecula to the south, the unincorporated community of Wildomar to the north, and areas of unincorporated Riverside county to the east and west. The city is approximately 80 miles southeast of Los Angeles; 65 miles north of San Diego; and 45 miles south of the city of Riverside. The Riverside/San Diego county boundary lies 6.5 miles to the south of the city. Interstate 15 (I-15) and Interstate 215 (I-215) pass through the city and converge near its southern boundary. The Murrieta MEA study area includes both the city of Murrieta, and its sphere of influence. The sphere of influence is 11,657 acres in size and is bordered by the city of Murrieta to the west, the city of Temecula and State Route 79 to the south and east, and Scott Road and the unincorporated community of Menifee Valley to the north. The location of the study area in the region is shown on Figure 1-1, and the boundaries of the study area are shown on Figure 1-2.



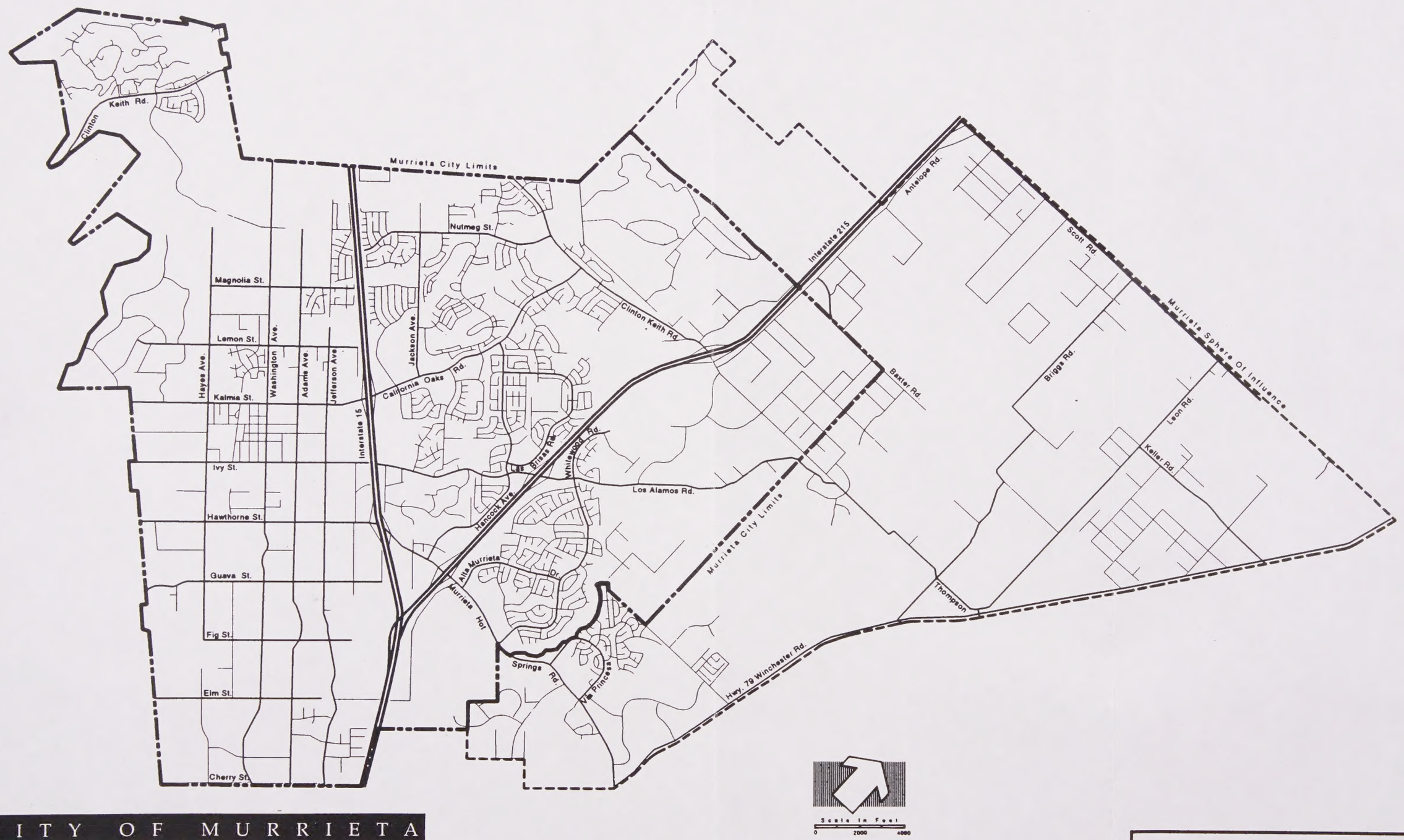
CITY OF MURRIETA

No Scale

MASTER ENVIRONMENTAL ASSESSMENT

Location Map

FIGURE 1-1



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Murrieta MEA Study Area

FIGURE 1-2

OVERVIEW OF ENVIRONMENTAL SETTING

The study area is located in the Murrieta Valley Region. The Santa Ana Mountains and the Santa Rosa Plateau form the western boundary of the city, the Santa Margarita and Agua Tibia ranges are to the south, and San Jacinto ranges lie approximately 33 miles to the south of the city. The topography of the city is highly variable with elevations ranging from approximately 1,030 feet above mean sea level in the flatter low lying areas of the valley to about 2,121 feet in the hillsides to the north of the study area, and to about 1,620 feet on the steep hillsides of the Santa Ana Mountains in the western portion of the study area. The study area is crossed by Murrieta Creek which flows southeasterly through the Murrieta Valley, and is bounded by Warm Springs Creek on the east. Both creeks have highly variable flows and join Temecula Creek to the south of the city to form the Santa Margarita River which drains into the Pacific Ocean near the southern boundary of Camp Pendelton. Much of Murrieta Creek and Warm Springs Creek remain in a semi-natural state and have not been channelized for flood control purposes. Despite the alteration of much of the areas native plant communities, significant areas of chaparral, coastal sage scrub, and riparian scrub and forest still remain. The largest concentrations of native vegetation are found in the foothills and canyons in the extreme western portion of the study area, along the slopes and base of the Hogbacks, in the steep northeastern hillsides, and along portions of the Warm Springs and Murrieta Creek.

The urbanized area of the city is characterized by a combination of old and new development. Rural low density development is generally located west of I-15, where horsekeeping areas and open fields are interspersed by individual homes rather than concentrated neighborhoods. In contrast to the western portion of the city, substantial new planned residential developments are the dominant land use in the central portion of the city, spanning between the I-15 and 215 freeways and extending into a portion of the eastern study area. The northern portion of the study area, and the sphere area to the east, remain largely undeveloped with some low density residential uses.

SUMMARY OF ENVIRONMENTAL ISSUES

CHAPTER 2

2. SUMMARY OF ENVIRONMENTAL ISSUES

GEOLOGY, SOILS, SEISMICITY

The city of Murrieta encompasses approximately 26.5 square miles within the Murrieta Valley, in the Peninsular Ranges Geomorphic Province, which extends north from Baja California to the San Gabriel Mountains. The Santa Ana Mountains and the Santa Rosa Plateau are located directly to the west, the Santa Margarita and Agua Tibia ranges are to the south, and the San Jacinto ranges lie approximately 35 miles to the east. The elevations within the study area range from approximately 1,030 feet above mean sea level (+1030 feet msl) in the Murrieta Valley to about +2,120 feet msl in the rolling hillsides north of the valley, and to about +1,620 feet msl on the steep hillsides of Slaughterhouse Canyon in the western portion of the study area.

The 1971 United States Soil Conservation Survey map indicates that the main soil types in the city of Murrieta are formed from alluvium with mixed sources and have slopes of less than two percent. Runoff rates and erosion hazard are generally low because of large areas of flat topography. Permeability is typically low. The majority of the area is underlain by soils of five soil associations with minor occurrences of several other soil types. The five major association have been identified as follows: **Cajalco - Temescal - Las Posas Association:** This association is located in the northwest and southwest portions of the city and covers a large portion of the study area. The soils are well-drained, on slopes ranging from 2 to 25 percent. **Friant - Lodo - Escondido Association:** This association is located in the southwest portion of the study area. The soils are mainly on islands of metamorphosed sandstone and mica-schist rock in the intermediate valley and on foothills of the Santa Ana Mountains. They range from well-drained to excessively drained, on slopes ranging from 2 to 25 percent. **Cieneba - Rock Land - Fallbrook Association:** This association is limited to a small area in the southwestern portion of the study area. The soils occur mainly on granitic rock islands in the intermediate valleys and on the foothills of the San Jacinto Mountains. They are well-drained, on slopes ranging from 2 to 25 percent. **Hanford - Tuguna - Greenfield Association:** This association covers only a small portion of the study area. The soils formed in granitic alluvium washed from the uplands, and occur on short alluvial fans and on flood plains. They are excessively drained to well-drained, on slopes ranging from 0 to 25 percent. **Monserate - Arlington - Exeter Association:** This association occurs primarily in the central western portion of the study area, south of Interstate Highway 15. The soils occupy old alluvial fans and terraces. These areas are dissected by drainageways, or barancas, that have flat bottoms and steep sides. The soils of this association formed in granitic alluvium washed from the San Jacinto Mountains, from the Woodcrest area, and from islands in the valley floors. They are well-drained, on slopes ranging from 0 to 25 percent.

The city of Murrieta is located in a region of historic seismic activity. Portions of the city have been designated under the Alquist-Priolo Special Studies Zones Act of 1972 because of the presence of active fault systems within the City limits. These zones are revised periodically, and extend 200 to 500 feet on either side of identified fault traces. No structures for human occupancy may be built across an identified active fault trace, and an area of 50 feet on either side of an active fault trace is assumed to be underlain by the fault, unless proven otherwise. Proposed construction within the Special Studies Zone is permitted only following the completion of a fault location report prepared by a California Registered Geologist. Active and potentially active faults within 50 miles of the project area are as follows: Elsinore Fault Zone, Wildomar Fault, Wolf Valley Fault, San Andreas Fault Zone, Newport-Inglewood Fault Zone , San Jacinto Fault Zone, Agua Caliente Fault Zone and the Murrieta Hot Springs Fault.

The most likely source of strong ground motion in the region would be a major earthquake (between M 7.0 and M 8.25) on the San Andreas fault, the main trace of which is about 50 miles northeast of the city. This fault is classified as active with a reoccurrence interval of 100 years to 200 years. It is likely that a similar pattern of seismicity will persist into the foreseeable future. The probability of a M 7.5 or greater earthquake along the Mojave segment of the San Andreas fault zone is estimated to be 30 percent by the year 2018.

Liquefaction is a response to severe groundshaking that can occur in loose soils. This transformation from solid state to liquid state (quicksand), as a response to seismically induced groundshaking, can cause structures supported on the soils to tilt or settle (sometimes very violently and rapidly) as the supporting capabilities of the soils diminish with the increase in the time of groundshaking. Ground failures from liquefaction are limited to certain geologic and hydrologic conditions and certain types of materials. Conditions necessary for liquefaction to occur are the presence of loose, cohesionless, uniformly-sized, fine sandy to silty sandy materials, a water table within about 30 feet of the ground surface, and cyclic loading of relatively long duration. By these criteria, water saturated clay-free sediments in the most recent Holocene unit generally are expected to have a high susceptibility to liquefaction. Areas within the study area that have a potentially significant liquefaction hazard are located in the southern portion of the city west of Interstate Highway 15 from Hawthorn Street, from Murrieta Hot Springs Road east to Cherry Street, and from Jefferson Avenue south to Douglas Avenue.

Subsidence or settlement is a loss of elevation of the land surface caused by rearrangement of individual soil grains into smaller spaces. It occurs in poorly unconsolidated soils, primarily recent alluvium and poorly compacted or improperly founded fills, and may result from natural or man-made causes. The more significant natural causes are seismically-induced groundshaking, local or regional tectonic settling, and heavy rainfall, which is more likely to affect unstable fills. Man-induced causes of subsidence include groundwater, oil, and gas withdrawal. The area from Guava Street southerly to Cherry Street and from Jefferson Avenue westerly to Hayes Avenue has been zoned by Riverside County as an area of potential subsidence.

The potential for ground fissuring exists in Murrieta, Temecula and Wolf Valley. Ground fissures can be attributable to several causes or combination of causes, including landsliding, volcanic activity, contracting soils and seismic activity. Ground fissuring in the Murrieta Valley area appears to be a direct result of seismic activity in the Elsinore and San Jacinto fault zones, combined with secondary ground failures caused by subsidence. Ground fissures have been identified in the southern portion of the city of Temecula. This fissure is approximately 5 miles in length and begins just north of Winchester Road, west of Murrieta Creek, continuing south toward Wolf Valley. It is expected that this fissure will continue to lengthen, eventually reaching the southern boundary of Murrieta.

In addition to this fissure, the city of Murrieta has established a Special Geologic Report Zone in the northern corner of the city to examine fissuring and subsidence activity as part of the construction permitting process. The purpose of requiring studies is to determine the nature of the ground failures and the types of measures necessary to reduce, eliminate or avoid their effects on structures to be built in the zone. Such measures must be applied prior to the issuance of building permits within the zone. If possible, remedial measures should be applied to structures already affected by fissuring.

HYDROLOGY AND WATER QUALITY

Both the city of Murrieta and the sphere of influence area lie within the inland portion of the Santa Margarita River basin, which encompasses an area of approximately 750 square miles. The major tributaries within the study area are Murrieta Creek and Warm Springs Creek. Murrieta Creek currently remains a natural watercourse running from the northern city limit, along the Rancho Temecula Line, to the southern city limit at Cherry Street. In its unimproved state, Murrieta Creek lacks the capacity to safely convey 100-year storm flows through the City. Currently, the Riverside County Flood Control and Water Conservation District is proposing to improve 11 miles of the Murrieta Creek from Rancho California Road in Temecula to upstream of Clinton Keith Road north of the Murrieta city limits, to provide 100-year flood protection to existing development. The majority of Warm Springs Creek is not well-defined and remains undeveloped at this time. The only improvement along its length is the Warm Springs Channel which runs from Murrieta Creek to Interstate 15.

Many areas of the City have a history of severe flooding associated with overflow from the Murrieta Creek and its tributaries. Much of the Murrieta Creek area and sections along Warm Springs Creek are currently without formal flood control systems and as a result drainage, even with moderate rain, is haphazard in the less developed areas of the City. Based on detailed analysis, Flood Insurance Rate Maps from the Federal Insurance Administration identify 100- and 500-year flood boundaries, inundation along Murrieta Creek and Warm Springs Creek.

A Master Drainage Plan prepared for the Murrieta Creek area by the Riverside County Flood Control and Water Conservation District evaluates drainage needs and proposes an economical drainage plan which would provide flood protection for both existing and future development in the city. Improvements are

proposed for the Murrieta Creek and its tributaries. The recommended improvements would consist of the channelization of Murrieta Creek and its major tributaries and include several concrete-lined open channels and a small network of underground storm drains.

The Murrieta Creek Area Drainage Plan was prepared through the merger of the Master Drainage Plan for the Murrieta Creek area, dated March, 1986, and the Master Drainage Plan for the Wildomar area, dated August, 1980. This Area Drainage Plan for controlling flood and drainage problems in the Murrieta Creek area concludes that certain flood and drainage facilities are critically needed for an orderly and economical development of the area. This plan consists of the improvement of Murrieta Creek, as well as the construction of numerous side drains.

In addition to the flood hazard currently posed by the Murrieta Creek, the City is also subject to potential flooding from dam inundation from Lake Skinner and could be at risk from failure of the Eastside Reservoir being proposed by the Metropolitan Water District. Flooding as a result of dam failure is a remote event, however it must be considered and recognized in the planning process.

The study area is underlain by two major ground water basins - the Murrieta-Temecula Basin and the French Basin. The Murrieta-Temecula Basin underlies about 60,000 acres and is the largest ground water basin in the hydrologic unit assigned to the area drained by the Santa Margarita River. The basin has an estimated storage capacity of 1.2 million acre feet. It underlies the entire Murrieta Creek channel as well as much of Warm Springs and Santa Getrudis Creeks. It also lies under large portions of Pechanga and Temecula Creeks. The various creeks are important sources of recharge water for the underlying ground water basin. Water flows out of the basin toward the Lake Elsinore area in the northwest and rises to the Santa Margarita River in the southwest. Many of the wells producing water from this ground water basin are located in the Murrieta area.

French Basin extends into the study area from the northeast. Underflow from Auld Basin as well as surface streams charge the basin. Water outflows by surface discharge to Warm Springs Creek which crosses the French Valley. The basin underlies approximately 3,500 acres.

There are two concerns with the projected rapid urbanization of the area. In addition to the increased demands on local water resources, development tends to decrease the natural recharge of ground water. The replacement of pervious surfaces with impervious ones and the resulting rapid run-off of rainwater, as well as, the collection of water into concrete channels inhibits natural water infiltration.

The level or suitability of water for different uses, particularly, human contact, is defined by varying drinking water standards. Federal drinking water standards set limitations for particular chemical constituents, establish maximum contaminant levels, and set aesthetic standards related to odor and taste

for potable water delivered by local agencies. The Federal Water Pollution Control Act requires discharges (from both point and non-point sources) into navigable waters to meet stringent standards regulated under the National Pollution Discharge Elimination System (NPDES).

Surface water quality within Murrieta Creek is generally good with some high concentrations of TDS during times of low flow and some exceedances of nitrate and phosphate. Ground water quality varies within the Murrieta and French basins. Water extracted at higher elevations and deeper unconfined aquifers is generally of higher quality.

BIOLOGICAL RESOURCES

Biological communities found within the city limits and sphere of influence are summarized below in order of approximate acreage covered.

Urbanized areas although severely altered from their original condition still provide habitat for some native species, particularly where native trees such as oaks and sycamores are incorporated into urbanized landscapes. Urbanized portions of the study area have some value as foraging, roosting, and nesting habitat for native birds and other wildlife. Almost all of the grasslands occurring in the city are dominated by **non-native grasslands**. Many of these areas once supported sage scrub and/or chaparral and are now undergoing succession from pasture and cropland back to some form of scrubland. These grasslands offer excellent habitat for several types of native wildlife, including rodents and birds of prey. Although the majority of grasslands in the city are dominated by non-native species, some small areas of native grassland may still occur on heavier more clayey soils or within other habitat types such as oak woodlands or chaparral. A substantial portion of the study area has been or continues to be used for agricultural purposes. **Agricultural lands** in the study area provide habitat value for wildlife similar to the grassland areas discussed above. The largest contiguous expanse of **Chaparral** vegetation occurs on the Hogbacks next to Warm Springs Creek. Small areas also occur elsewhere and the southwestern city boundary includes small portions of the extensive chaparral hillsides that extend up to the plateau. Chaparral provides habitat for a very wide range of wildlife species in all groups, however, the diversity of the species declines sharply when expanses of chaparral are fragmented or isolated from other habitat areas. Two types of **sage scrub** occur in the region, Diegan and Riversidian. Examination of more typical areas of sage scrub indicate that it may be the more prevalent of the types occurring in the study area. Sage scrub is most notable for being the habitat of the California gnatcatcher, for which at least one occurrence is known within the city. Although riparian forest tree species are scattered along major creeks only small areas of actual riparian forest community occur. Some of these areas are very rich and correspond most closely to Southern Coast Live Oak Riparian Forest, or are transitional to Southern Cottonwood-Willow Riparian Forest. **Riparian communities** have extremely high wildlife values for many reasons. They provide for almost all wildlife, as well as nesting and denning habitat for many species. Riparian habitats generally constitute the only corridors of natural habitat through developed areas, thus permitting daily or seasonal wildlife movement, which is often essential in maintaining ecological stability and species diversity. Extremely high quality habitat is present along Warm Springs Creek and along unnamed

intermittent creeks near I-215 and the northern city boundary. Along Murrieta Creek some areas of riparian oak forest and mulefat scrub persist, and the creek as a whole has great restoration potential that is heightened by the proximity of the Santa Rosa Plateau and the ecological integrity of the intervening hillsides and canyons. In addition to these riparian areas seasonal wetlands, springs, and possibly vernal pools also occur within the study area. These areas may contain a distinctive assemblage of species including special-status plants or invertebrates or may be dominated by introduced or facultative species.

A number of species of concern have been identified as occurring or having the potential to occur within the study area. Most notable among these species are Stephen's Kangaroo Rat, and the California Gnatcatcher. **Stephen's Kangaroo Rat** (SKR) is a seed-eating rodent found in western Riverside County, extreme southwestern San Bernardino County, and part of San Diego County. It is a California and federal endangered specie. Its preferred habitat is open grassland although it occurs in open coastal sage scrub and sandy washes. The Endangered Species Act (ESA) prohibits any action that could harm, harass, or further endanger the species, including the loss of its habitat. The ESA allows the loss of individuals of an endangered specie and its habitat, provided that a Habitat Conservation Plan (HCP) is prepared. The Murrieta MEA study area is located within a HCP fee area for the SKR. Within designated study areas of the HCP land may be purchased to mitigate the loss of habitat elsewhere within the species range. Currently none of the SKR Study Areas and Known Occupied Habitat areas are designated within Murrieta and its sphere of influence, although areas of high habitat value are known to exist. An update to the HCP is currently under development. The **California gnatcatcher** is a California species of special concern. Although its primary habitat is in Diegan coastal sage scrub, it is also found in the Riversidian form of this community and even in chaparral that is not excessively dense. Although an occurrence of the gnatcatcher is recorded near Warm Springs Creek, east of the Hogbacks, areas of habitat within the study area are isolated from other suitable habitat by extensive areas of altered habitat and development. As such is questionable whether the gnatcatcher is still present within the study area. In addition to wildlife, a number of special-status plant species have been found or have the potential to occur within the study area. Special-status species are most likely to occur within habitats associated with vernal pools and clay soils, wetlands, and areas of chaparral, scrub, and woodlands.

LAND USE

The land use section of the MEA describes existing land uses and approved specific plans in the Murrieta study area. The existing land use information is based on the 1992 inventory conducted by the City, which included an examination of assessor records, aerophotographs and field checks. The data collected from the inventory was transferred to a computerized based map using a CAD system.

The city of Murrieta encompasses approximately 26.5 square miles. The sphere of influence includes an additional 18.2 square miles for a total study area of roughly 44.7 square miles or 28,646 acres. According to the recent land use inventory, residential use accounts for 7,604 acres or 26.2 percent of the total study area. Almost two-thirds of the existing residential uses are rural residential (lots larger than half an acre in size). Commercial, industrial and public/institutional uses, which are employment

generating uses, represent only 3.2 percent of the total land use area. The largest segment of Murrieta's existing total land area is undeveloped. This includes all vacant land, agricultural land, farms and mining land. Undeveloped land represents 16,598 acres or 57.9 percent of the total study area.

The land use data presented in the section is separated and detailed by geographic areas. The areas are as follows: the area west of Interstate 15 (I-15); the area between I-15 and State Highway 215 (Hwy 215); the area east of Hwy-215; and the sphere of influence.

Their are eleven approved specific plans within the City of Murrieta and the sphere of influence. Several specific plan areas (i.e. Bear Creek & Joaquin Ranch) share specific plan numbers and have joint or overlapping approvals. These plans account for more than 9,953 acres in the Murrieta General Plan Area and have already had a significant impact on land use patterns. Each specific plan area, is identified by name, number, location within the study area, relation to major roadways and geographic boundaries, size in acres and mix of land uses including residential, commercial, industrial, civic/institutional, open space, and vacant land. Also included is an assessment of current development status.

POPULATION AND HOUSING

In recent years the city of Murrieta has become one of the fastest growing communities in the region. In 1990, the city of Murrieta had 19,076 residents, which represented an increase of 746 percent over 1980. During the same period, Riverside County's population grew by 76 percent. The population of the MEA study area was 23,739. According to the 1990 Census, the median age of Murrieta was 31.9 years. The ethnic composition of the population was 81.9 percent White, 13.7 percent Hispanic, 3.1 percent Asian, 1.0 percent Black and 0.5 percent Indian. The household size of Murrieta has increased from 2.71 in 1980 to 2.86 in 1990. During this same period the number of households increase from 833 to 7,003. Although smaller households continue to comprise the largest segment of the total households (1 and 2 person households combined for 51.1 percent), larger families are increasing at a faster rate. The income distribution of these households are diverse. In 1991, it was estimated that 15.8 percent of Murrieta's households had annual incomes of less than $15,000, while 13.2 percent of the households had income of over $75,000.

In 1990, there were 11,093 housing units in the MEA study area. Single family detached units represented 67.8 percent of the total housing stock. The second largest portion of the housing stock was mobile homes and trailers which represented 16.3 percent. The age of Murrieta's housing stock is relatively new, with almost 80 percent built after 1980. Although the housing tenure of the housing stock is predominately owner occupied, vacancy is relatively high at 23.5 percent. This is attributed to the large standing inventory of newly constructed homes. In 1992, the city estimated that the median sale price of homes in Murrieta was approximately $140,000. At this price, the current housing stock is not affordable to very low income households, as well as low income households consisting of three and seven persons.

The size of the housing stock relative to the number of employment opportunities creates a housing-rich/job-poor area. This imbalance of jobs to housing results in greater work commutes which contributes to the regional air quality.

ECONOMICS

Murrieta's economy has been driven by the area's wide-range of housing opportunities. In recent years this has stimulated other sectors of the economy including retail, office and industrial. The Inland Empire is housing-rich/job-poor, however recent trends indicate that employment growth in the Inland Empire is been significantly rising. During the 1980-1990 period, the Inland Empire captured 17.3 percent of Southern California's employment growth. Employment growth has more than double during the previous decade of the 1970s. Despite dramatic increases in employment opportunities in the Inland Empire, many residents still commute to work in Los Angeles, Orange and San Diego Counties.

Employment growth of Murrieta will be dependent on the growth of the retail, office and industrial sectors. Based on a 1992 citywide survey of retail facilities, there are 934,549 square feet of retail floor space of which 14.2 percent are vacant. The office sector, which is not a large share of the local employment base represents approximately 1.34 million square of office space in the city of Murrieta and vicinity. Approximately 30 percent of the office space is currently vacant. The city of Murrieta represents less than 10 percent of the total office space in the area. Most of the city's office space is medical use. The industrial sector, which includes manufacturing, distribution, and contract construction, represents between 23 and 27 percent of all local employment. In recent years, southwest Riverside County has emerged as a significant industrial location in the Inland Empire due in part to the availability of housing for a wide range of families in all income levels. Within the Murrieta/Temecula market area, there are approximately 6.28 million square feet of existing industrial space. However, only 578,700 square feet or 9.2 percent of the total industrial space is located in the city of Murrieta. More than 90 percent of the areas industrial space is located in the city of Temecula.

UTILITIES

The MEA discussion of utilities focuses on existing service and infrastructure for electricity, natural gas, water, wastewater, and solid waste. Water service within the study area is provided by four retail water purveyors: Eastern Municipal Water District (EMWD), Elsinore Valley Municipal Water District (EVMWD), Rancho California Water District (RCWD), and Murrieta County Water District (MCWD). The Murrieta area overlies one of the largest underground aquifer systems in Southern California, and as a result, groundwater is an important source of supply to each of the retail purveyors mentioned. Groundwater supplies are augmented by imported water from the Metropolitan Water District of Southern California. Water is imported to the region via the Colorado River Aqueduct. In addition to these water sources, both Eastern Metropolitan Water District and Rancho California Water District are producing reclaimed water for use in and around the city. This water is being used primarily for groundwater recharge and landscape irrigation.

Wastewater collection and treatment for the study area is provided by EMWD and RCWD. In addition to these districts private septic systems are also used within the study area. Both districts wastewater treatment plants are currently operating under capacity and have plans for expansion. For both water and sewer conveyance systems are limited and constrained in some areas, and significant additional infrastructure will be needed to serve future development.

Solid waste services for the study area are provided by Waste Management of Inland Valley and a number of other private haulers. The study area falls within the service area of the El Sobrante and Double Buttte Landfills. Waste in the city has also been deposited in Mead Valley Landfill. Double Butte Landfill is scheduled to reach capacity in late 1993, and the El Sobrante Landfill in 2001. The city currently participates in curbside recycling, and a Source Reduction Element is also under preparation in conformance with Assembly Bill 939.

PUBLIC SERVICES

Public services considered for the MEA include fire protection, law enforcement, schools, libraries, and parks and recreation. The Murrieta Fire Protection District (MFPD) provides services that include fire prevention, suppression, planning and engineering, disaster preparedness, rescue services, and emergency medical services. The sphere area is served by the Riverside County Fire Department (RCFD) through a contract with the California Department of Forestry (CDF). These agencies also provide overlapping service under agreements for automatic aid and wild-land fire response. At this time the MFPD has two fully operational stations and one constructed but not yet operational. MFPD has a total of 43 full-time employees and 50 volunteers. To meet future fire protection needs, the MFPD has three additional stations planned, and two additional stations under consideration.

There are three law enforcement agencies that have jurisdiction within the city and sphere area: the Murrieta Police Department (MPD), the Riverside County Sheriff's Department (RCSD), and the California Highway Patrol. The MPD formed on August 1, 1992, provides services within the city limits. MPD employs 34 full-time officers, eight dispatchers and one secretary. This provides a ratio of .8 officers per 1,000 residents. Services provided by the MPD include dispatching emergency calls for police, fire and medical services, responding to calls for service, patrolling, enforcing all laws, investigation traffic collisions and providing crime prevention education programs. The RCSD provides services to the sphere area from a station located next to French Valley Airport, east of Winchester Road. The station is staffed with 107 employees which includes 62 field deputies. The CHP has jurisdiction within the study area along Interstate 15, 215, and State Highway 79.

There are five school districts which provide school services to the residents of the city and sphere area: Murrieta Valley Unified School District (MVUSD), Menifee Union School District, Perris Union School District, Hemet Unified School District, and Murrieta Valley School District. Murrieta Valley School District provides the majority of school services for the city and the southeastern portion of the sphere area. As is true for all of the districts, MVUSD has experienced rapid growth and a number of schools

are over or near capacity. As a result of these conditions, MVUSD, and the other districts are pursuing aggressive schedules for the acquisition and development of new schools. Due to declining availability of funding from federal and state sources over the last several years, school funding, and the identification of sites is an important issue for the developing study area.

The study area is currently served by the Temecula Library, a branch of the Riverside County Free Library located in the city of Temecula. This facility is not of an adequate size to serve both communities. A library planning firm has been selected by the County and is currently developing a community analysis of the Murrieta, Wildomar, and Lake Elsinore area to identify where new library services should be located. The study area is served by fifteen parks, totaling 125.75 acres. Based on a 1990 Census population of 23,739 (city and sphere) the study area has a ration of 5.30 acres of parkland per 1,000 population. In addition to these parks, there are also a number of planned and proposed trail systems within the study area.

TRANSPORTATION/CIRCULATION

The transportation/circulation section of the MEA presents documentation of the existing roadway system conditions within the City of Murrieta and its sphere of influence. The section summarizes the existing network of regional and local roadway features (i.e. travel lanes, intersection controls), daily traffic volumes and conditions, and daily roadway capacity utilization and circulation plans/studies. Current traffic count data sheets and supplemental count source references are included in the report to provide an organized compilation of count information.

AIR QUALITY

For the purposes of air quality planning, Murrieta is located within the South Coast Air Basin, a 6,600 square-mile area encompassing Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The climate in the South Coast Air Basin (SCAB) is influenced by the topographic and geographic conditions of the basin. The basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino and San Jacinto mountains to the north and east. The region lies in the semipermanent high pressure zone of the Eastern Pacific. As a result, the climate is characterized by warm summers, mild winters, infrequent rainfall, frequent morning coastal fog, and moderate onshore breezes. Precipitation is generally limited to a few storms during the winter "wet" season between November and April. Rainfall patterns in the region average about 12-13 inches per year.

The dominant daily wind pattern in the basin is a diurnal sea breeze followed by a nocturnal land breeze. This pattern is broken only by occasional winter storms and infrequent strong northeasterly Santa Ana winds from the mountains and deserts. The net effect of this dominant daily wind pattern is that daytime

air pollutant emissions from coastal sources are carried inland and nighttime winds carry the inland pollution to the coastal areas. However, the weak nighttime wind conditions can allow for localized stagnation of pollutants inland.

National and state air pollution containment standards are set by the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB), for the following pollutants: ozone, carbon monoxide, nitrogen dioxide, PM_{10} (suspended particulate matter 10 microns or less in diameter), sulfur dioxide, and lead. The South Coast Air Quality Management District (SCAQMD) also monitors for compliance with two other state standards: sulfates and visibility. Containment levels in the ambient air are sampled and compared to national and state standards to determine air quality.

The South Coast Air Quality Management District (SCAQMD) samples ambient air quality at over 38 monitoring stations in the basin. The South Coast Air Basin is considered to have the worst air quality problem in the nation. Despite having introduced many strict air pollution emission controls, the basin still fails to meet the federal air quality standards for four of the six criteria pollutants; ozone, carbon monoxide, nitrogen dioxide and PM_{10}. Ozone levels exceed national and state standards throughout the basin. In 1989, the basin was the only area in the nation that failed to meet nitrogen dioxide standards. Carbon monoxide and ozone concentrations in the basin were among the highest in the nation, (approximately three times the federal standard), and particulate (PM_{10}) concentrations were approximately 80 percent above federal standards.

Most of the basin's air quality problems stem from continued growth in population, heavy industry and vehicle traffic however, area topography and climatology also factor in. The mountains and hills which surround the basin, act as barriers and trap pollutants that are not blown out of the basin with the daily onshore flows. These trapped pollutants begin to accumulate and air quality in the basin worsens. Thermal inversions in the basin effectively trap the polluted air and prevent further dispersion.

The city of Murrieta is located in SCAQMD's Air Quality Monitoring Area 26. The closest station in the monitoring area is a new station that began operation in the city of Temecula in 1991. The station monitors ozone, carbon monoxide, nitrogen dioxide, and PM_{10}. In 1991, the station measured excessive amounts of ozone (federal and state 1-hour standards were exceeded) and PM_{10} (state 24-hour standard was exceeded).

The SCAQMD and the Southern California Association of Governments (SCAG) have been designated to develop regional air quality plans for the SCAB. An Air Quality Management Plan (AQMP) adopted in 1979 and revised in 1989, projects attainment of all national standards by the year 2007. Strategies to meet this goal include technological measures and the achievement of a better balance between jobs and housing in the basin to reduce commuter vehicle trips. The California Clean Air Act, enacted in 1988, requires that regional emissions be reduced by 5 percent per year, averaged over 3 year periods, until attainment can be demonstrated. Areas not meeting standards must prepare a plan to demonstrate

compliance. Areas with the most heavily degraded air, such as the South Coast Air Basin, must reduce emissions 50 percent from 1987 levels by December 31, 2000. In July 1991, the SCAQMD adopted a new AQMP to meet these requirements which defers the attainment date to 2010. The 1991 plan shifts the emphasis to reductions in vehicle miles traveled rather than job\housing balance and relies on market incentives to reduce emissions from several stationary sources. All development projects deemed regionally significant must conform to the AQMP and job\housing balance goals contained in SCAG's Regional Growth Management Plan.

The SCAQMD divides air pollutant sources into stationary and mobil sources. These two sources contribute to decreased air quality in Murrieta and the entire South Coast Basin. Stationary sources (industrial facilities, construction sites, automotive services, dry cleaners, etc.) represent only a small portion of the air quality problem in the city while mobile sources (automobiles, trucks, motorcycles, airplanes, trains, etc.) represent by far the largest generator of air pollutants in Murrieta.

NOISE

In order to limit human exposure to physically and/or psychologically damaging noise levels, the State of California, through the State General Plan Guidelines (Government Code Section 65302 (f) requires that cities include a noise element in their general plans. Consistent with this requirement, various county governments and most municipalities have established standards and ordinances to control noise. The California Department of Health Services (DHS) Office of Noise Control has studied the correlation of noise levels and their effects on different land uses. As a result, the DHS has established four categories for judging the severity of noise intrusion on specified land uses. According to these guidelines, residential uses are normally unacceptable in areas exceeding 70 dB Ldn and conditionally acceptable within 60 and 70 dB Ldn.

The Noise Element of the Riverside County General Plan and the County Noise Ordinance establish outdoor and indoor noise limits by land use. The County Noise Element also contains planning areas, noise objectives, programs and mitigations to ensure a compatible noise environment between land uses.

Policies detailed in the County Noise Element consider transportation and other noise sources, noise standards, sensitive receptors, noise reduction measures and implementation potential for these policies. Single and multiple family homes, group homes, schools, hospitals, convalescent homes, parks and open space lands where quietness is a basis for use, are considered noise sensitive land uses by the County.

The Riverside County General Plan Noise Element discusses major sound generators and noise sensitive land uses in the twelve land use planning areas of the county. The predominant noise source in the Southwest Territory Land Use Planning area, which includes Murrieta, originates from motor vehicle traffic along Interstate 15 (I-15) and Interstate 215 (I-215). However, the city is also minimally affected by noise associated with two local airports; the small privately owned Bear Creek Airport, located in the city and the French Valley Airport, located outside of the city's sphere of influence approximately 2 miles

east of the city limits in the unincorporated area of Riverside County. Murrieta is also affected to a lesser extent by short-term noise sources, such as construction activities, and by stationary noise primarily associated with industrial facilities.

The noise environment for Murrieta can be described using noise contours developed for the major noise sources within the city. Existing noise contours for the city have been estimated based on the Federal Highway Administration (FHA) Highway Noise Model and existing traffic volumes provided by Kahn and Kain Associates. The noise contours are used to identify areas of existing or potential noise impacts. CNEL contour levels of 60dB, 65dB, and 70dB are shown on the map. Any existing or proposed land uses within a 65 dB to 70 dB CNEL contour should be considered for noise mitigation programs. For example, within the 60 dB CNEL contour, any proposed noise sensitive land uses should be evaluated on a project specific basis and may require mitigation to meet city or state standards. Within the 65dB to 70dB CNEL residential development should be carefully reviewed to ensure that proper mitigation is included in projects in order to meet California Noise Insulation Standards for maximum interior noise levels of 45 dB.

HEALTH AND SAFETY (RISK OF UPSET)

Wildland and urban fires, hazardous materials, aircraft hazard, and emergency preparedness, along with seismic hazards discussed earlier, are key considerations in protecting the health and safety of the city's population. The undeveloped hillside areas in and adjacent to the City present a potentially serious hazard due to the high potential for large scale wildland fires. The threat is particularly significant during dry summer months and when there are strong Santa Ana winds. Wildland fire protection for the city of Murrieta is the primary responsibility of the Murrieta Fire Protection District (MFPD) with assistance from the California Department of Forestry (CDF) provided under a special agreement for fire protection of wildlands. There are 5,722 acres of land within the study area that are considered as having high potential for wildland fires. In the event of a major wildland fire, other resources would be brought into the city as needed as part of the statewide emergency management system. No significant unusual urban fire hazards have been identified within the study area.

There are 24 businesses in the city that incorporate hazardous materials into their production or service processes and 27 businesses that generate hazardous waste. The majority of these businesses include automotive services, dry cleaners, photoprocessing, medical services, printing, and lithography. Potential hazards associated with hazardous materials include fires, explosions and leaks. Based on a comprehensive records search performed at the state and county level 35 sites were identified as having contamination associated with underground tanks which store petroleum products, and one site was identified as having lead contaminated soil. The EPA has installed an asphalt cap on the site with the lead contaminated soil to protect the public from exposure. Hazardous materials response within the study area would involve the MFPD, the CDF Hazardous Materials Response Team, and the County Health Department.

French Valley Airport, located approximately 2 miles outside the city's sphere of influence, is a source of potential hazard to people and property within the study area. The French Valley Airport Influence Area extends into the eastern portion of the city and covers a large area within the city's sphere of influence. This area is developed based on a composite of noise and height constraints. With the exception of concentrated residential development off of Via Princessa within the Murrieta Hot Springs Specific Plan, and a residential development north of Hunter Road and west of Highway 79, the majority of the airport influence area is vacant or occupied by a few rural residences. In order to Areas of safety concern within the study area, from most to least restrictive, fall within the airport's Outer Safety Zone (19 acres), Emergency Touchdown Zone (8 acres), and Traffic Pattern Zone. The first two zones are fall within the proposed Boreal Airpark Center Specific Plan. Wider areas fall within the least restrictive Traffic Pattern Zone. Regulations within these zones focus on prohibited land uses, and land use restrictions such as height limits, and dwelling unit density.

The main document addressing emergency preparedness in the city is referred to as the Multi-Hazard Functional Plan (MHFP). The MHFP outlines specific response protocol for extraordinary emergency situations associated with natural or human caused disasters, technological incidents, and nuclear defense operations. The document includes the city as part of the county and statewide emergency management system. The document is intended to be read and understood by members of the city's Incident Command System before an emergency. The adequacy and maintenance of this document is essential to ensure adequate response and preparedness in the event of a major emergency.

AESTHETICS/VIEWS

The visual character of the city of Murrieta is defined to a large extent by the physical geography of the area. Murrieta is located in the Murrieta Valley region and is surrounded by rolling hillsides and steep mountain slopes. The Santa Rosa Plateau and Santa Ana Mountains located immediately to the west are the most dominant and significant visual features contributing to the City's scenic quality. Other mountain ranges that are visible from the city include the Santa Margarita and Agua Tibia ranges to the south, and the San Jacinto ranges to the east. Elevations in the study area range from approximately 1030 feet above mean sea level (+1030 msl) in the valley to about 2120 feet msl in the rolling hills in the northern portion of the study area, and to about 1620 msl along the steep hillsides of Slaughterhouse Canyon in the extreme western portion of the study area. In addition to the surrounding hillsides and mountains, Murrieta and Warm Springs Creeks and a number of tributaries course through the city in a southwesterly direction. Where the creeks and streambeds have not been substantially disturbed they provide the city with an important scenic resource. Despite the alteration of much of the city's native plant communities, significant areas of chaparral and riparian scrub and forest remain and contribute to the visual quality of the study area's hillsides and creek corridors. The largest concentrations of native vegetation are found in the foothills and canyons in the extreme western portion of the city, along the base of the Hogbacks, in the steeper northeastern hillsides of the study area, and along portions of Warm Springs Creek, and to a lesser extent Murrieta Creek. In addition to these concentrations of native vegetation, stands and single specimens of large oak trees remain scattered throughout the study area.

Within the developed portions of the study area two districts of the city stand out as having high scenic quality: the area west of Washington Avenue which is characterized by low rolling hillsides, horse ranches, tree groves and open fields, and; the corridor established by Los Alamos Road which includes low density residential development, rolling hillsides, unique rock outcroppings and groves of eucalyptus and olive trees. The scenic quality of the Murrieta study area has initiated actions for designating both Interstate 15 and 215 as scenic highways.

LIGHT AND GLARE

The major sources of light and glare in the city are primarily associated with buildings, recreational facilities, parking lots and street lights. Lighting is more concentrated in the developed central area of the city, with light sources dropping off sharply in the rural and hillside areas to the east, west and north. There are three sensitive light receptors affected by lighting in the city: residential development, wildlife, and the Mount Palomar Observatory. Residential development is often sensitive to lighting from roadways and other land uses, particularly multi-story buildings, parking lots, and recreational facilities. Where developed areas border natural habitat areas, lighting can disturb or act as a deterrent to wildlife. The Mount Palomar Observatory is located approximately 25 miles southeast of the study area. Light emissions from street, safety and other lighting sources, depending on the level of multispectrum wave energy produced, can cause interference with telescope operations. Light sources that produce too many wavelengths of energy cannot be adequately filtered by the telescope and can severely compromise the efficiency of the observatory, as has occurred in the Los Angeles area with the Mount Wilson and Griffith Park Observatories. Riverside County Ordinance 655, which has been in effect since July 7, 1988, prohibits various classes of lighting in the city based on sensitivity zones. The city of Murrieta is located in Zone B. In general, the ordinance prohibits all Class I lighting within the study area from operation between 11:00 p.m. and sunrise (with some exceptions), and prohibits other than low pressure sodium street lights on private roadways and streets. As there are no large high-rise buildings and few other structures in the city which are constructed with highly reflective materials, there are few problems associated with glare. However, as new development occurs, glare could become a problem if appropriate consideration is not given to the choice of building materials.

CULTURAL RESOURCES

The MEA study area has a high concentration of archaeological, and historical resources and a potentially high concentration of paleontological resources. There are 53 archaeological sites (within the boundaries of the city of Murrieta), and 65 sites known within one mile of the city limits recorded in the California Archaeological Inventory. With reliable water sources and fertile land, the Murrieta area has always been a reliable place to live, and it is not unusual for a single site to contain evidence of occupation from the prehistoric through the historic period. Proper identification of cultural resources is mandated by state law and is primarily initiated through the conformance procedures of CEQA. Under CEQA, an archaeological survey may be required for a project if cultural resources are identified as potentially significant during environmental review. A sound approach to making a determination of significance is essential to ensure

protection of these resources. In addition to archaeological sites, the Riverside County Historic Resources Inventory lists 72 properties in the city eligible for listing as historic places and landmarks.

The Murrieta area is underlain almost exclusively by highly fossiliferous rock units such as the Pauba formation and the Unnamed Sandstone formation. Formations in the Murrieta area have yielded a remarkable array of fossil vertebrates which include mammoth, mastodon, ground sloth, dire wolf, short-faced bear, saber-toothed cat, tapir, camel, llama, and pronghorn. Deposits have also yielded smaller vertebrate fossils which contribute significant information toward deciphering the temporal constraints under which sediments were deposited. A significant portion of the study area has been classified by the San Bernardino County Museum Earth Sciences Division as having high potential for containing significant, nonrenewable paleontologic resources. Consistent with the CEQA Guidelines, and the recommendations of the Society of Vertebrate Paleontology, development proposals within the study area must be evaluated as part of the environmental review process to determine the paleontological sensitivity of a given site. Project sites within areas of the city designated or known to have high paleontologic sensitivity should be required to complete a standard paleontologic resource mitigation program. Such a program would include monitoring and salvage of fossils during excavation, recovery and identification of specimens, and curation of specimens into a museum repository with retrievable storage.

ENVIRONMENTAL ASSESSMENT

CHAPTER 3

GEOLOGY, SOILS, AND SEISMICITY

SECTION 3.1

3.1 GEOLOGY, SOILS AND SEISMICITY

INTRODUCTION

This section presents information pertaining to the geological characteristics of the city of Murrieta and its sphere of influence. Geotechnical conditions often pose significant opportunities as well as constraints to land use development and the location of major public facilities and infrastructure.

Geology, faulting, seismicity, and soils are summarized as a basis for discussion of geotechnical constraints associated with implementation of the subsequent General Plan.

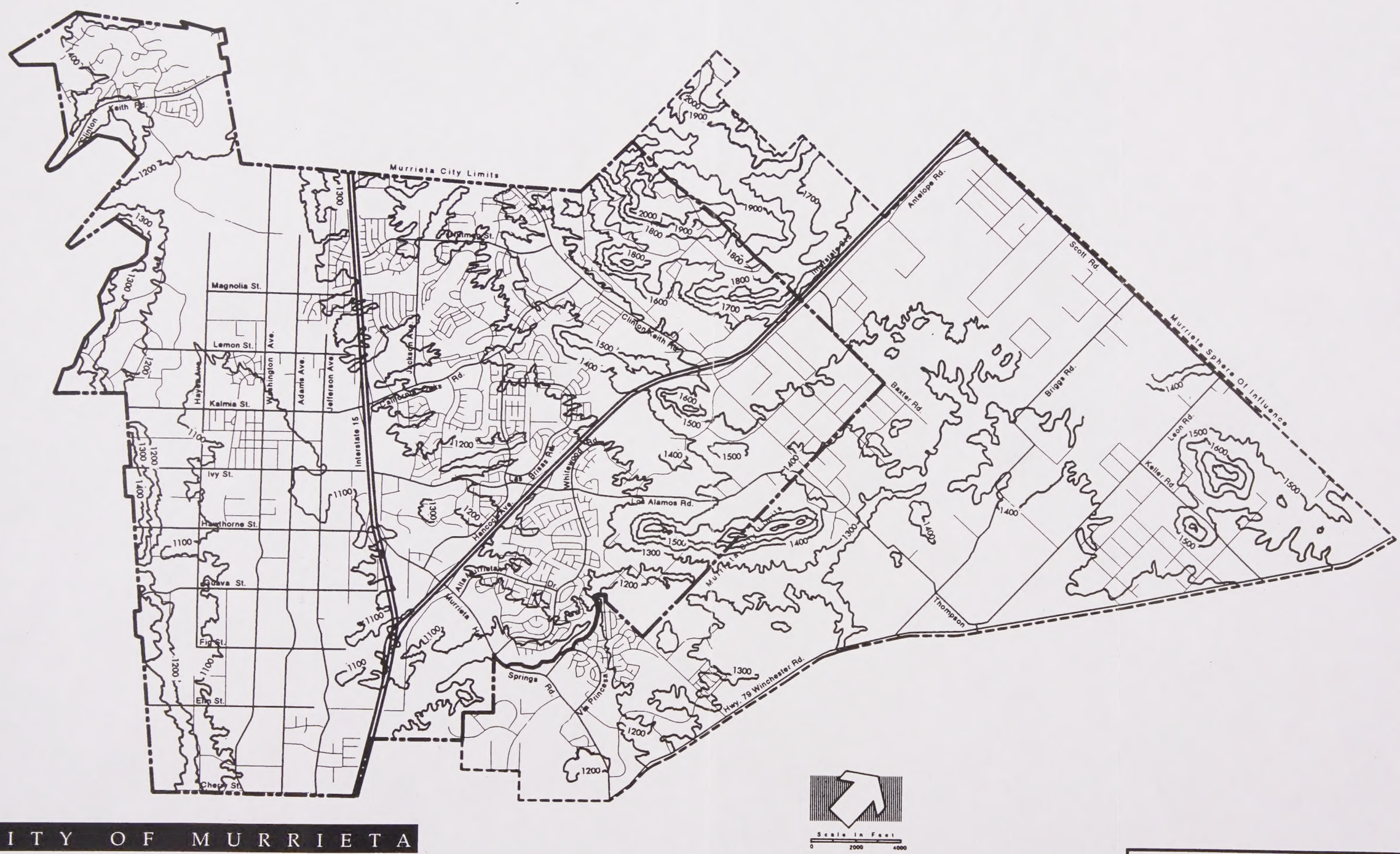
GEOLOGY

The city of Murrieta encompasses approximately 26.5 square miles within the Murrieta Valley, in the Peninsular Ranges Geomorphic Province, which extends north from Baja California to the San Gabriel Mountains. The Santa Ana Mountains and the Santa Rosa Plateau are located directly to the west, the Santa Margarita and Agua Tibia ranges are to the south, and the San Jacinto ranges lie approximately 35 miles to the east. The elevations within the study area range from approximately 1030 feet above mean sea level (+1030 feet msl) in the Murrieta Valley to about +2120 feet msl in the rolling hillsides north of the valley, and to about +1620 feet msl on the steep hillsides of Slaughterhouse Canyon in the western portion of the study area (Figure 3.1-1).

The Murrieta area is underlain by alluvial deposits of Holocene age; the surrounding hills consist primarily of sedimentary bedrock of late Pleistocene age. The underlying geologic formations shown on Figure 3.1-2 are described briefly in the following paragraphs.

Pauba Formation (Qps): The nonmarine sedimentary rocks of the Pauba formation are of Pleistocene age and are well-exposed from Pauba Valley northwestward to Elsinore. The formation is composed of siltstone, sandstone cobble and boulder conglomerate facies, and mudstone and fanglomerate facies. It has an exposed thickness of approximately 245 feet and contains an extensively cross-bedded sandstone member, as well as a poorly sorted conglomerate and mudstone member.

Alluvium (Qal): Alluvium is unconsolidated material that has been transported and deposited primarily by flowing water. This soil-forming material is highly variable in composition; it occurs in valleys, canyons, and areas tributary to major and minor water courses. The Temecula Basin is underlain by as much as 120 feet of alluvium in some areas. Alluvial materials in the study area generally are poorly consolidated, silty to clayey, sands.



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

TOPOGRAPHICAL MAP

FIGURE 3.1-1

LEGEND

- AGUANGA BASIN
- ELSINORE TROUGH
- TEMECULA BASIN
- SANTA ROSA PLATEAU
- PERRIS BLOCK
  OAK MOUNTAIN BARRIER

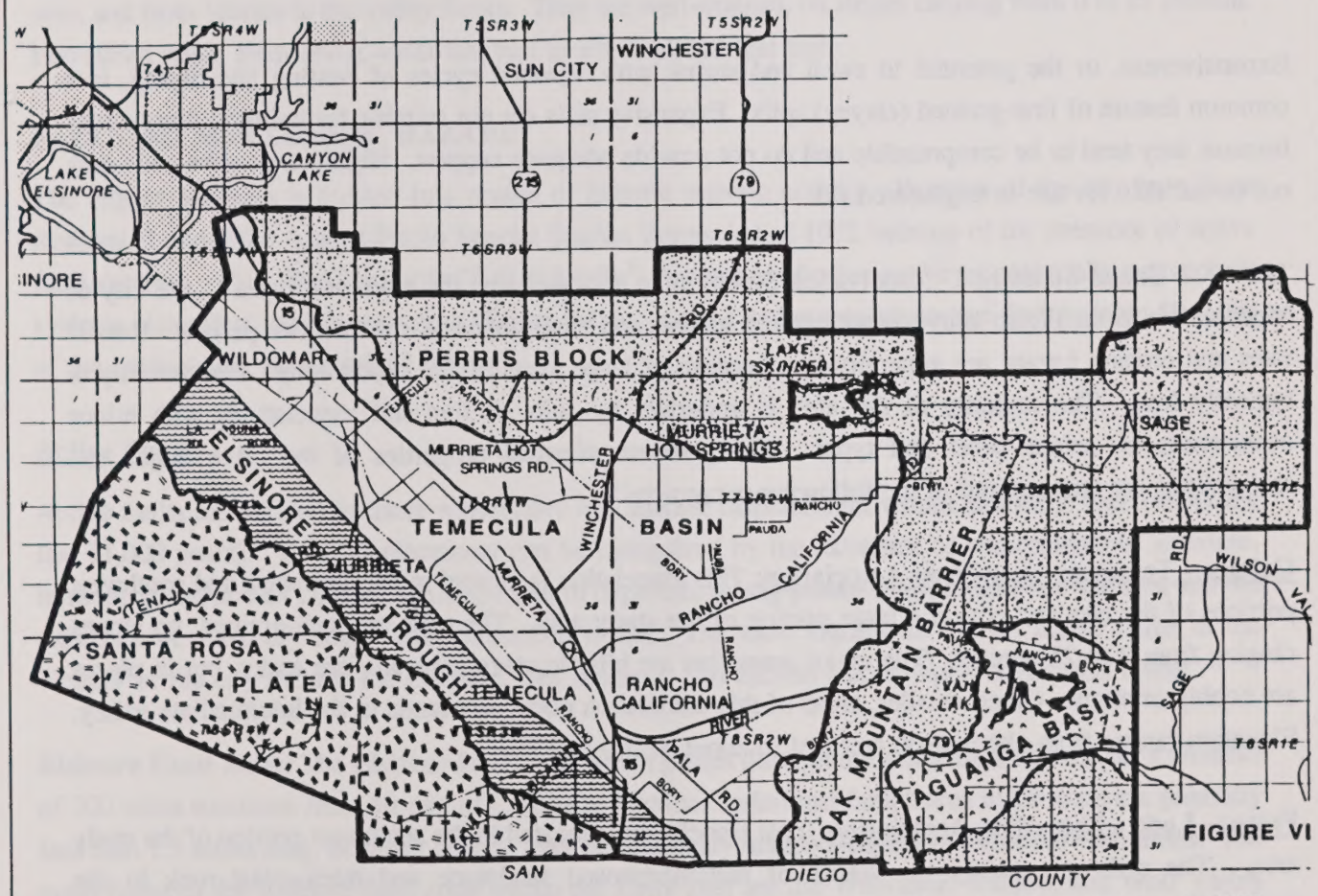


FIGURE VI

Source: Geology of a portion of the Elsinore Fault Zone, J.F. Mann, Jr., 1955

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

GEOLOGIC FORMATIONS

FIGURE 3.1-2

Landslide Deposits (Qls): Several landslides have been mapped within the study area. These include two small landslides in Slaughterhouse and Cole canyons in granodiorite formations, and two small landslides north of the Wildomar fault zone in the Pauba formation.[1]

SOILS

Engineering characteristics of soils which are of importance are permeability, expansiveness, erosion potential and stability. These soil conditions can affect the types of foundations used at construction sites and the type of irrigation system installed. High clay and low sand content in soils tend to reduce permeability and increase shrink-swell potential. Low permeability refers to a slow rate of percolation. Extremely low permeability can produce structural problems due to loss of strength from saturation beneath foundations. Positive drainage must be established to prevent supporting soils from becoming weakened by saturation.

Expansiveness, or the potential to swell and shrink with repeated cycles of wetting and drying, is a common feature of fine-grained (clayey) soils. Expansive soils are not suitable for building foundations because they tend to be compressible and do not provide adequate support. Highly expansive soils may not be suitable for use in engineered fill.

The 1971 United States Soil Conservation Survey map indicates that the main soil types in the city of Murrieta are formed from alluvium with mixed sources and have slopes of less than two percent. Runoff rates and erosion hazard are generally low because of large areas of flat topography. Permeability is typically low. The majority of the area is underlain by soils of five soil associations with minor occurrences of several other soil types. The pertinent physical properties of the five major soil associations are summarized in the following paragraphs.[2]

Cajalco - Temescal - Las Posas Association: This association is located in the northwest and southwest portions of the city and covers a large portion of the study area. The soils are well-drained, on slopes ranging from 2 to 25 percent. The major areas that are hilly to steep generally are rocky, but in places are cobbly or stony. Other, smaller, areas of this association occur as islands in the intermediate valley. Elevation ranges from about +900 feet msl to about +2200 feet msl.

Friant - Lodo - Escondido Association: This association is located in the southwest portion of the study area. The soils are mainly on islands of metamorphosed sandstone and mica-schist rock in the intermediate valley and on foothills of the Santa Ana Mountains. They range from well-drained to excessively drained, on slopes ranging from 2 to 25 percent. Elevation ranges from about +700 feet msl to about +2200 feet msl.

Cieneba - Rock Land - Fallbrook Association: This association is limited to a small area in the southwestern portion of the study area. The soils occur mainly on granitic rock islands in the intermediate

valleys and on the foothills of the Santa Ana Mountains. They are well-drained, on slopes ranging from 2 to 25 percent. Elevations range from about +700 feet msl to about +2200 feet msl.

Hanford - Tuguna - Greenfield Association: This association covers only a small portion of the study area. The soils formed in granitic alluvium washed from the uplands, and occur on short alluvial fans and on flood plains. They are excessively drained to well-drained, on slopes ranging from 0 to 25 percent. Elevation ranges from about +600 feet msl to about +2200 feet msl.

Monserate - Arlington - Exeter Association: This association occurs primarily in the central western portion of the study area, south of Interstate Highway 15. The soils occupy old alluvial fans and terraces. These areas are dissected by drainageways, or barancas, that have flat bottoms and steep sides. The soils of this association formed in granitic alluvium washed from the Santa Ana Mountains, from the Woodcrest area, and from islands in the valley floors. They are well-drained, on slopes ranging from 0 to 25 percent. Elevations range from about +500 feet msl to about +2200 feet msl.

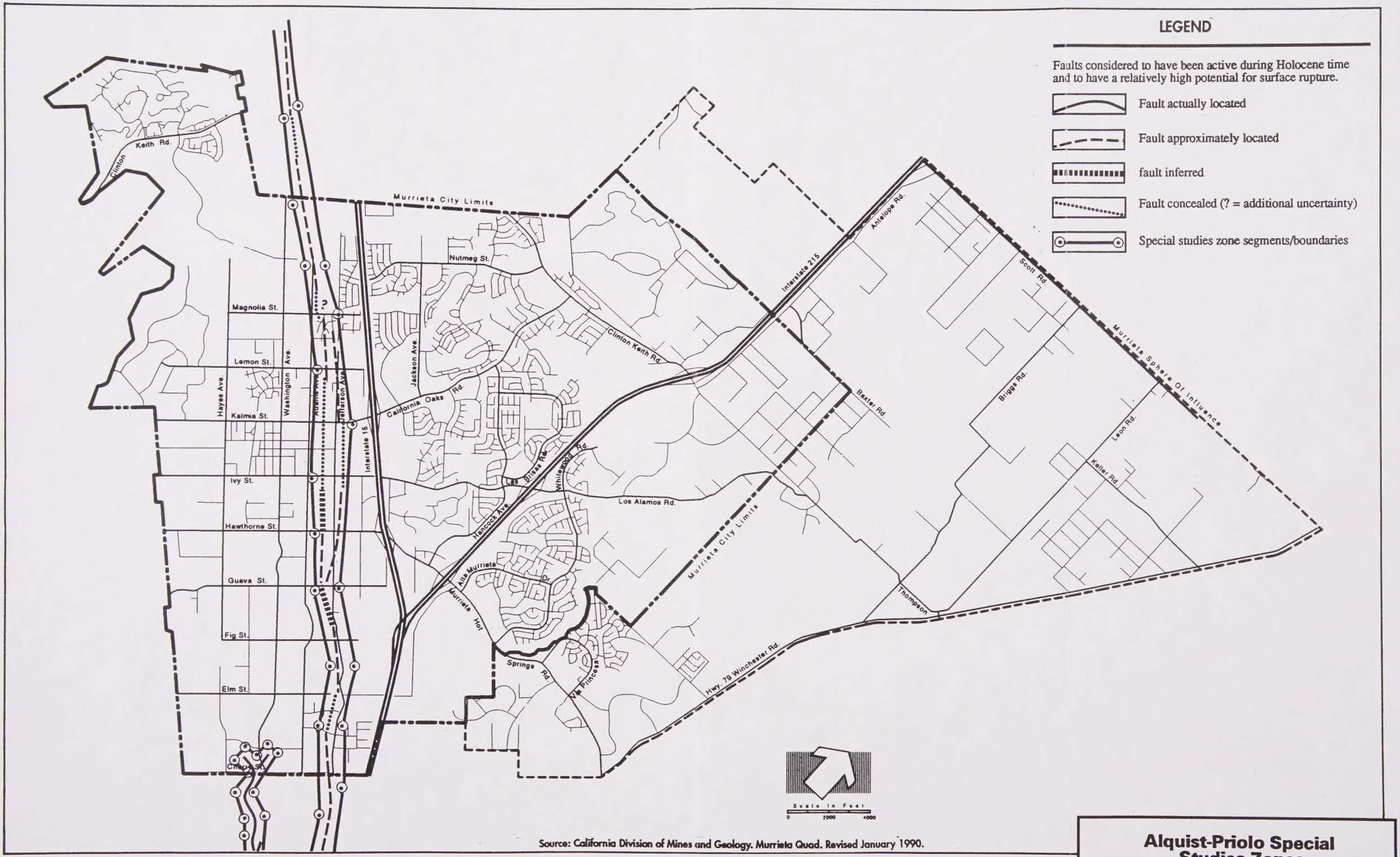
FAULTING AND SEISMIC HAZARD

The city of Murrieta is located in a region of historic seismic activity. Portions of the city have been designated under the Alquist-Priolo Special Studies Zones Act of 1972 because of the presence of active fault systems within the City limits (Figure 3.1-3).[3] A number of other active or potentially active fault systems also affect the Murrieta area (Figure 3.1-4). Active and potentially active faults within 50 miles of the project area are described below.[4]

Active Faults

Active faults are defined as those which have had surface displacement within Holocene time (about the last 11,000 years).[5] Such displacement can be recognized by the existence of escarpments in alluvium, terraces, offset stream courses, the alignment of depressions, sag ponds, fault troughs and saddles, and the existence of markedly linear steep mountain fronts. The most significant known active faults in the vicinity of the city include the Elsinore, San Andreas, San Jacinto and Newport-Inglewood faults.

Elsinore Fault Zone: The Elsinore fault zone, which passes through the study area, extends for a distance of 200 miles southeast from the city of Corona to Mexico. Individual fault traces in the zone are generally less than 1.3 miles long, however several have continuously mapped lengths in excess of 15.5 miles. The main faults of the Elsinore fault zone within the study area are the Wildomar, Willard, and Wolf Valley faults. The Elsinore fault zone is capable of generating earthquakes in excess of Richter Magnitude (M) 6 and has a range of recurrence intervals of 300 years to 2000 years.[6] The Wildomar and Wolf Valley faults both have portions considered active, which are described below. The Willard fault is subparallel to the Wildomar fault, and is not considered active because there is no evidence of Holocene activity.



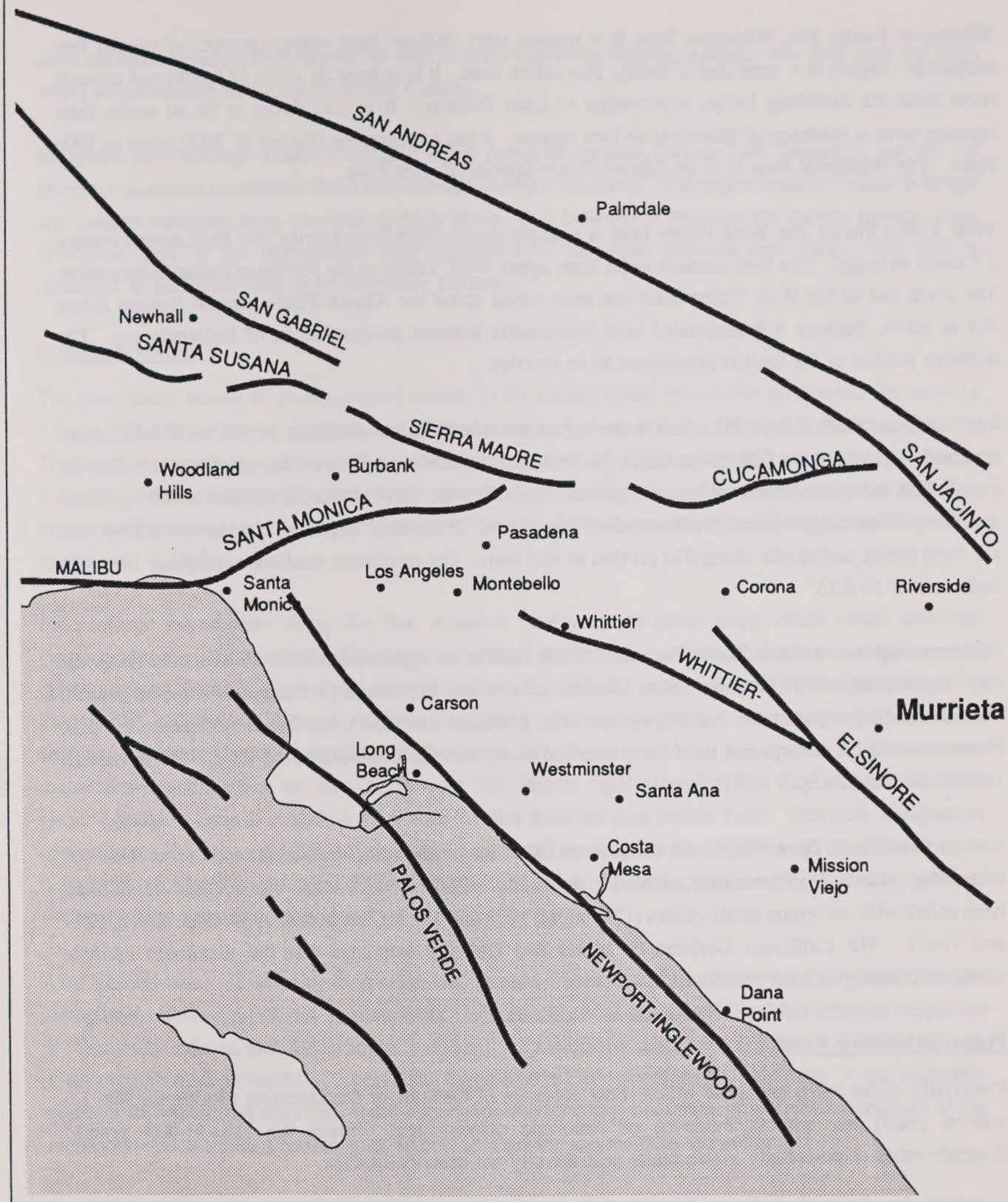
Source: California Division of Mines and Geology. Murrieta Quad. Revised January 1990.

Alquist-Priolo Special Studies Zones

FIGURE 3.1-3

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Regional Fault Locations

FIGURE 3.1-4

Wildomar Fault: The Wildomar fault is a normal right oblique fault which consists of one to five subparallel strands in a zone that is locally four miles wide. It is at least 25 miles in length and extends north from the Pechanga Indian Reservation to Lake Elsinore. It is considered to be an active fault because there is evidence of Holocene surface rupture. It has a recurrence interval of 2000 years to 3000 years. The Wildomar fault is in an Alquist-Priolo Special Studies Zone.

Wolf Valley Fault: The Wolf Valley fault is a single strand, right lateral strike slip fault approximately 3.7 miles in length. The fault extends south from upper Wolf Valley to the Pechanga Indian Reservation. The south end of the Wolf Valley fault has been zoned under the Alquist-Priolo Special Studies Zones Act as active, because it is associated with topographic features assumed to be of Holocene age. The northern portion of the fault is considered to be inactive.

San Andreas Fault Zone: This fault zone, approximately 50 miles northeast of the study area, is the dominant active fault in California, being the principal surface expression of the boundary between the Pacific and the North American tectonic plates. It borders the San Gabriel Mountains on the northeast and the southern edge of the San Bernardino Mountains.[7] The 1857 Tejon earthquake (M 8.25+) was the most recent earthquake along this portion of this fault. The maximum credible earthquake from this fault zone is M 8.25.[8]

Newport-Inglewood Fault Zone: Segments of this fault zone, approximately 36 miles southwest of the city, trend southeast from near Santa Monica, across the Los Angeles Basin, to Newport Beach. Movement along the southern segments of the zone produced the 1933 Long Beach earthquake (M 6.3). Numerous smaller earthquakes have been recorded along various segments of the zone. The maximum credible earthquake from this fault is M 7.0.

San Jacinto Fault Zone: This fault zone, about 30 miles northeast of the project area, is at least 100 miles long. It trends northwesterly, parallel to the Whittier-Elsinore fault zone. The southern section has been active with numerous small quakes (Claremont, 1918 and 1923; Casa Loma, 1939; Glen Helen, 1899 and 1907). The California Division of Mines and Geology estimates that the maximum credible earthquake from this fault zone is M 7.5.

Potentially Active Faults

Potentially active faults are those which show evidence of Quaternary displacement (during the last 1.6 million years) but without evidence of Holocene displacement (during the last 11,000 years).[9] Characteristics of potentially active faults near the city are described below.

Agua Caliente Fault Zone: This fault zone is a series of subparallel, northwest trending faults more than 56 miles in extent. One strand extends northwest to Murrieta Hot Springs, and several fault strands extend into San Diego County, toward the Anza Borrego Desert. In the study area, the fault zone contains several

short northeast trending fault strands, as well as some northwest trending strands. The fault zone has been zoned as potentially active by Riverside County.

Murrieta Hot Springs Fault: This fault is an east-west tending normal fault located in the city of Murrieta between Los Alamos Road and Murrieta Hot Springs Road. It is approximately 9 miles in length and extends southeast from Murrieta to Buck Mesa. It is believed to be either the eastern branch of the Wildomar fault, or the northeastern-most expression of the Agua Caliente fault zone. The fault is classified as potentially active by Riverside County.

Seismic Shaking

The most likely source of strong ground motion in the region would be a major earthquake (between M 7.0 and M 8.25) on the San Andreas fault, the main trace of which is about 50 miles northeast of the city. This fault is classified as active with a reoccurrence interval of 100 years to 200 years. It is likely that a similar pattern of seismicity will persist into the foreseeable future. The probability of a M 7.5 or greater earthquake along the Mojave segment of the San Andreas fault zone is estimated to be 30 percent by the year 2018.[10]

Future large earthquakes along the San Andreas fault zone or other faults could cause sustained groundshaking within the city. The expected ground motion characteristics of these earthquakes will depend on the characteristics of the generating fault, the distance to the epicenter, the magnitude of the earthquake, and the site-specific geologic conditions. For the purpose of predicting relative seismic shaking, Riverside County is divided into five zones of increasing shaking, based upon the distance to a major active fault, either the San Andreas or San Jacinto fault zones.[11] Thc City of Murrieta is in Ground Shaking Zone II, which is more than 9 miles from the San Jacinto fault. This zone designation may indicate lower groundshaking than can be expected to occur in the city because the Elsinore fault zone (with its lower magnitudes and lack of surface rupture) was not considered by the county when it established the groundshaking zones.

As a general rule, the severity of groundshaking does increase with proximity to the epicenter of the earthquake. However, bedrock formations and unconsolidated deposits (soils) exhibit different responses to seismically induced groundshaking. Given similar location and seismic energy output, the least amount of damaging vibration would occur on a site that was completely composed of bedrock. A site underlain by major thicknesses of alluvium would experience considerably more damaging vibration because of the unconsolidated material's tendency to deform to a greater degree than the bedrock.[12]

The direct effects of seismically induced groundshaking result from the cyclic horizontal and vertical movements of the ground during an earthquake. The ground motions range from such low intensities that they cannot be detected; except by specialized equipment, to such high intensities that buildings are, literally, shaken apart and heavy objects are thrown into the air. Depending on the combination of circumstances mentioned in the previous paragraphs, the same seismic event could create the entire range

of effects. The usual way of reporting these effects on a regional basis is through the use of the Modified Mercalli Scale. This is an arbitrary scale of earthquake intensity, ranging from I (detectable only instrumentally) to XII (causing almost total destruction), developed in Italy in 1902 by Giuseppi Mercalli. It was for North American conditions in 1931 and has remained essentially unchanged. Each succeeding step on the scale describes a progressively greater amount of damage at a given point of observation.[13]

Structures intended for human occupancy need to be able to resist these types of movements. Such structures are required to be designed at least to Uniform Building Code (UBC) standards for Seismic Zone 4, the zone in which the city is located. However, the UBC seismic zones only provide a minimum standard. The UBC seismic zones (1 through 4) roughly correspond to peak accelerations from the maximum credible earthquake expected within a given area (10 percent through 40 percent of the force of gravity). Because peak accelerations near the epicenters of large earthquakes commonly exceed 0.6g, it is essential that California-registered geotechnical and engineering professionals be involved in the planning and design of developments to provide the added reinforcing factors needed to ensure the survival of the structures during major seismic activity.

Surface Rupturing

Surface rupturing along the trace of a fault affects all types of material; however, it does not always show clearly in loose soils. Damage caused by surface rupturing is limited to the actual location of the fault-line break, unlike damage from groundshaking, which can occur at great distances from the fault. Even a moderate earthquake can be accompanied by enough surface rupturing to damage foundations and buried utility lines that have not been adequately protected where they cross fault traces. The most probable occurrence of ground rupture in the study area is along the surface traces of the Wildomar fault zone and to a lesser extent along the potentially active faults.

Under the Alquist-Priolo Special Studies Zone Act of 1972, the state geologist is required to delineate "Special Studies Zones" along known active faults in California. The purpose of the act is to regulate development near active faults in order to mitigate the hazard of surface fault-rupture.[14] Within the study zone areas of the city, no structures can be placed across traces of an active fault, and no structures of human occupancy are allowed within 50 feet of an active fault. these restrictions are minimum criteria, and it is recommended that essential or critical structures (such as high-rise buildings, schools, hospitals) be subject to more restrictive criteria at the discretion of the city. A Special Studies zone as described above has been delineated in the city along the Wildomar fault zone (Figure 3.1-3).

Liquefaction

Liquefaction is a response to severe groundshaking that can occur in loose soils. This transformation from solid state to liquid state (quicksand), as a response to seismically induced groundshaking, can cause structures supported on the soils to tilt or settle (sometimes very violently and rapidly) as the supporting capabilities of the soils diminish with the increase in the time of groundshaking. For example, during the

1971 San Fernando earthquake, liquefaction-induced ground failures resulted in irreparable damage to the San Fernando Valley Juvenile Hall and the partially-completed Jensen Water Filtration Plant in Sylmar.

Ground failures from liquefaction are limited to certain geologic and hydrologic conditions and certain types of materials. Conditions necessary for liquefaction to occur are the presence of loose, cohesionless, uniformly-sized, fine sandy to silty sandy materials, a water table within about 30 feet of the ground surface, and cyclic loading of relatively long duration. By these criteria, water saturated clay-free sediments in the most recent Holocene unit generally are expected to have a high susceptibility to liquefaction. Areas within the study area that have a potentially significant liquefaction hazard are located in the southern portion of the city west of Interstate Highway 15 from Hawthorn Street, from Murrieta Hot Springs Road east to Cherry Street, and from Jefferson Avenue south to Douglas Avenue (Figure 3.1-5).

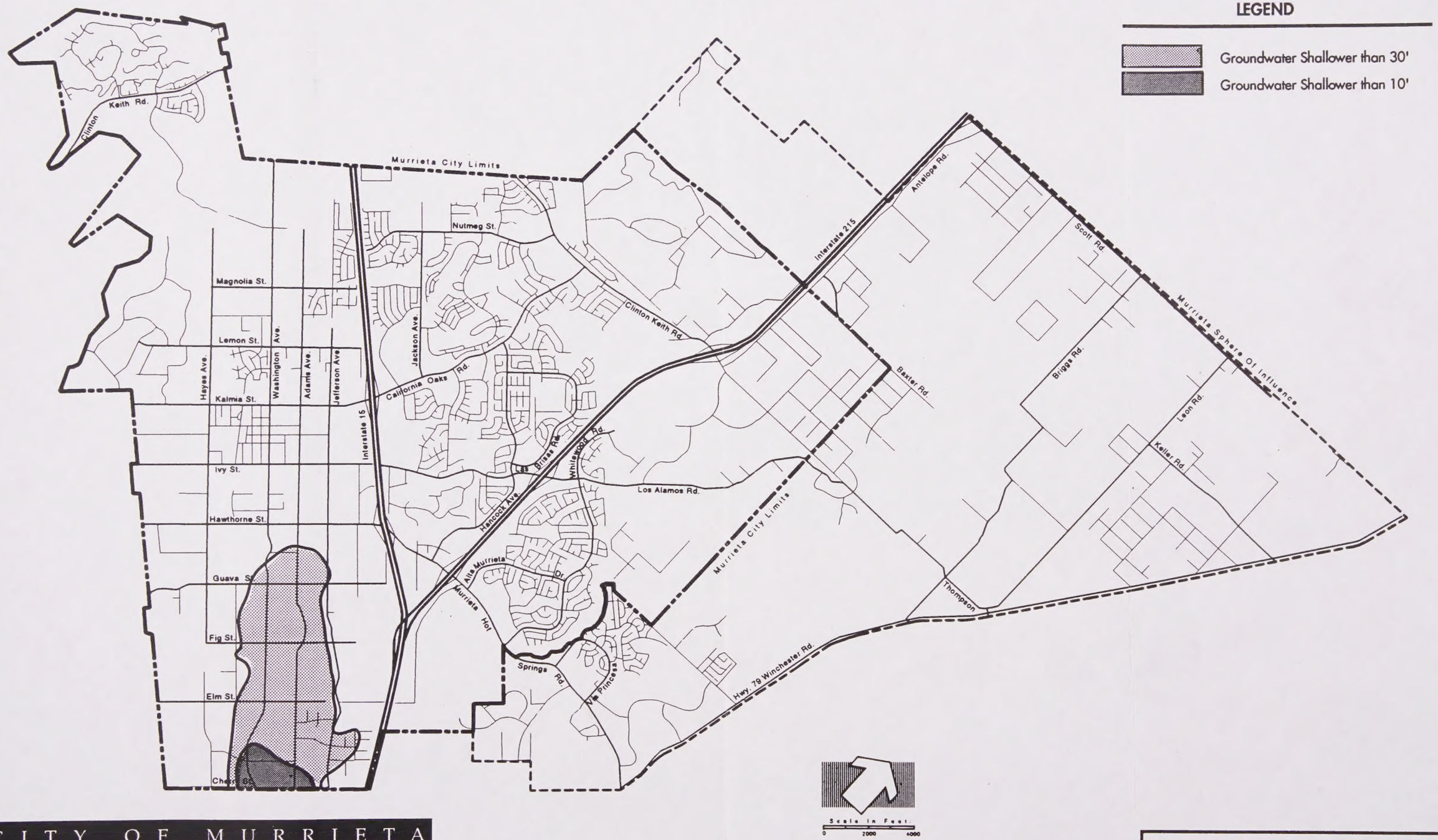
The potential effects of liquefaction may be dealt with in several ways. Designating the affected area as open space would avoid the necessity of structural corrective measures. Several options for creating stable subsurface conditions also are available. These include the use of some type of deep foundation system to reduce and control settlement, or the use of some type of soil compaction or solidification process to achieve the same effect.

Deep foundation systems include mat foundations and driven pile or cast-in-place pier foundations. Soil treatment options available include removing the liquefiable soil and replacing it with imported fill; removing the liquefiable soil, treating it with lime and replacing it in the excavation, adding debris rubble or imported fill as needed; and lime injection treatment of the liquefiable soil, in place. Which, if any, of these options would be suitable depends on the soil and water conditions at the site in question.

Detailed geotechnical and foundation investigations for proposed development sites in areas where liquefaction is suspected would be performed by California-licensed geologists and engineers as part of the design phase of the project. The recommendations from these investigations would need to be incorporated in the final design of the proposed developments.

Landslide

The landslide risk within the study area is generally low. However landslides may occur in areas of steep topography, particularly on highly fractured bedrock and where there is rapid stream undercutting. Other factors which may increase the probability of a landslide include the placing of loads at the tops of slopes, vibration from earthquakes or construction activities, and the removal of major vegetation from the slopes. Four landslides have been mapped within the study area, two in Slaughterhouse and Cole canyons, and two north of the Wildomar fault zone.



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Liquefaction Hazard Zone

FIGURE 3.1-5

Subsidence

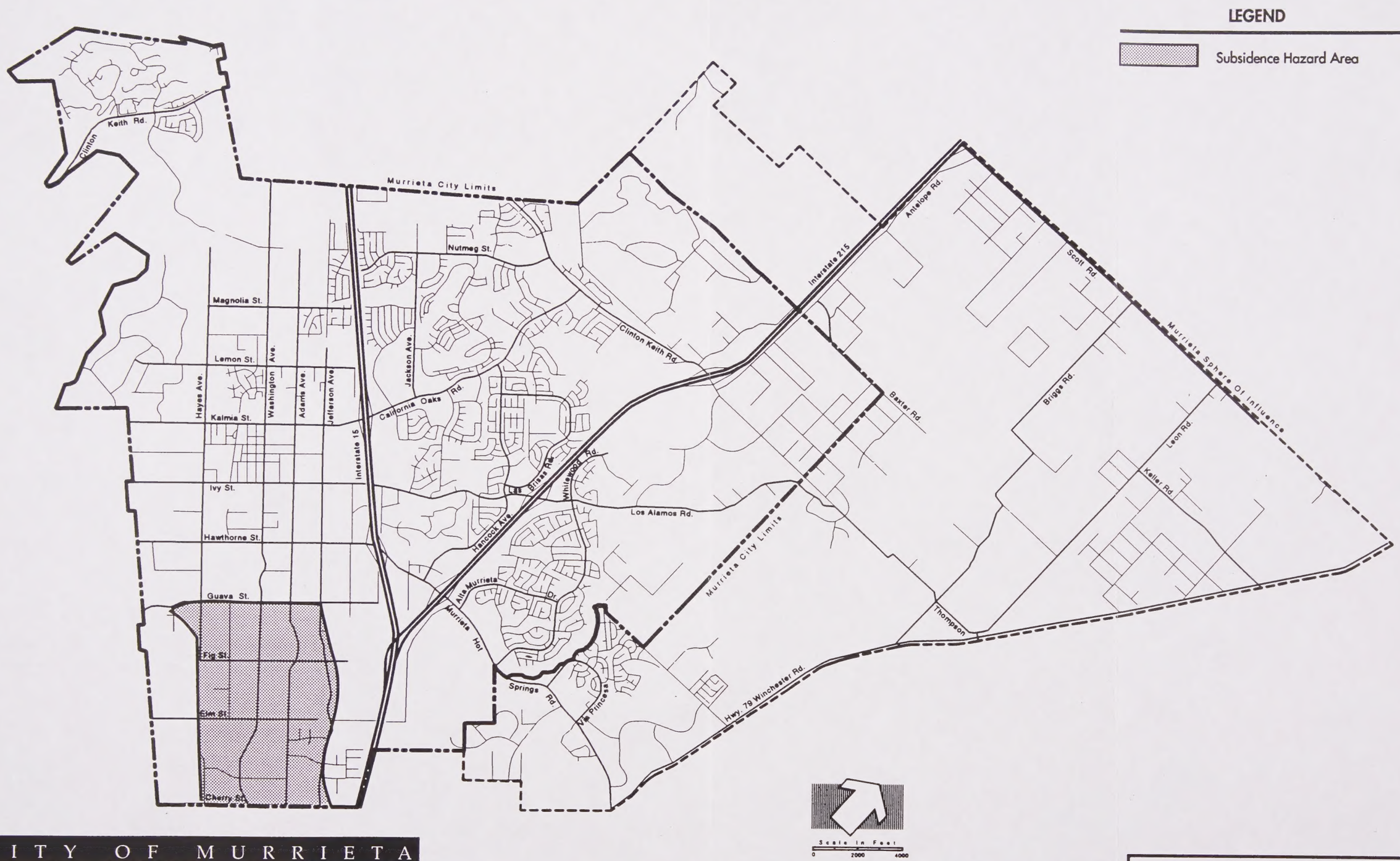
Subsidence or settlement is a loss of elevation of the land surface caused by rearrangement of individual soil grains into smaller spaces. It occurs in poorly unconsolidated soils, primarily recent alluvium and poorly compacted or improperly founded fills, and may result from natural or man-made causes. The more significant natural causes are seismically-induced groundshaking, local or regional tectonic settling, and heavy rainfall, which is more likely to affect unstable fills. Man-induced causes of subsidence include groundwater, oil, and gas withdrawal. The area from Guava Street southerly to Cherry Street and from Jefferson Avenue westerly to Hayes Avenue has been zoned by Riverside County as an area of potential subsidence (Figure 3.1-6).

The potential effects of subsidence may be dealt with in ways similar to those described for liquefaction. Designation as open space, or various options for creating stable subsurface conditions using deep foundation systems or soil treatment can be employed. The key to resolving the issue is detailed specific-site geotechnical and foundation investigations performed by California-licensed geologists and engineers. Their recommendations would be incorporated in the final design of proposed developments.

Fissuring

The potential for ground fissuring exists in Murrieta, Temecula and Wolf Valley. Ground fissures can be attributable to several causes or combination of causes, including landsliding, volcanic activity, contracting soils and seismic activity. Ground fissuring in the Murrieta Valley area appears to be a direct result of seismic activity in the Elsinore and San Jacinto fault zones, combined with secondary ground failures caused by subsidence. Ground fissures have been identified in the southern portion of the city of Temecula. This fissure is approximately 5 miles in length and begins just north of Winchester Road, west of Murrieta Creek, continuing south toward Wolf Valley. It is expected that this fissure will continue to lengthen, eventually reaching the southern boundary of Murrieta.

In addition to this fissure, the city of Murrieta has established a Special Geologic Report Zone in the northern corner of the city to examine fissuring and subsidence activity as part of the construction permitting process (Figure 3.1-7).[15] The purpose of requiring studies is to determine the nature of the ground failures and the types of measures necessary to reduce, eliminate or avoid their effects on structures to be built in the zone. Such measures must be applied prior to the issuance of building permits within the zone. If possible, remedial measures should be applied to structures already affected by fissuring.

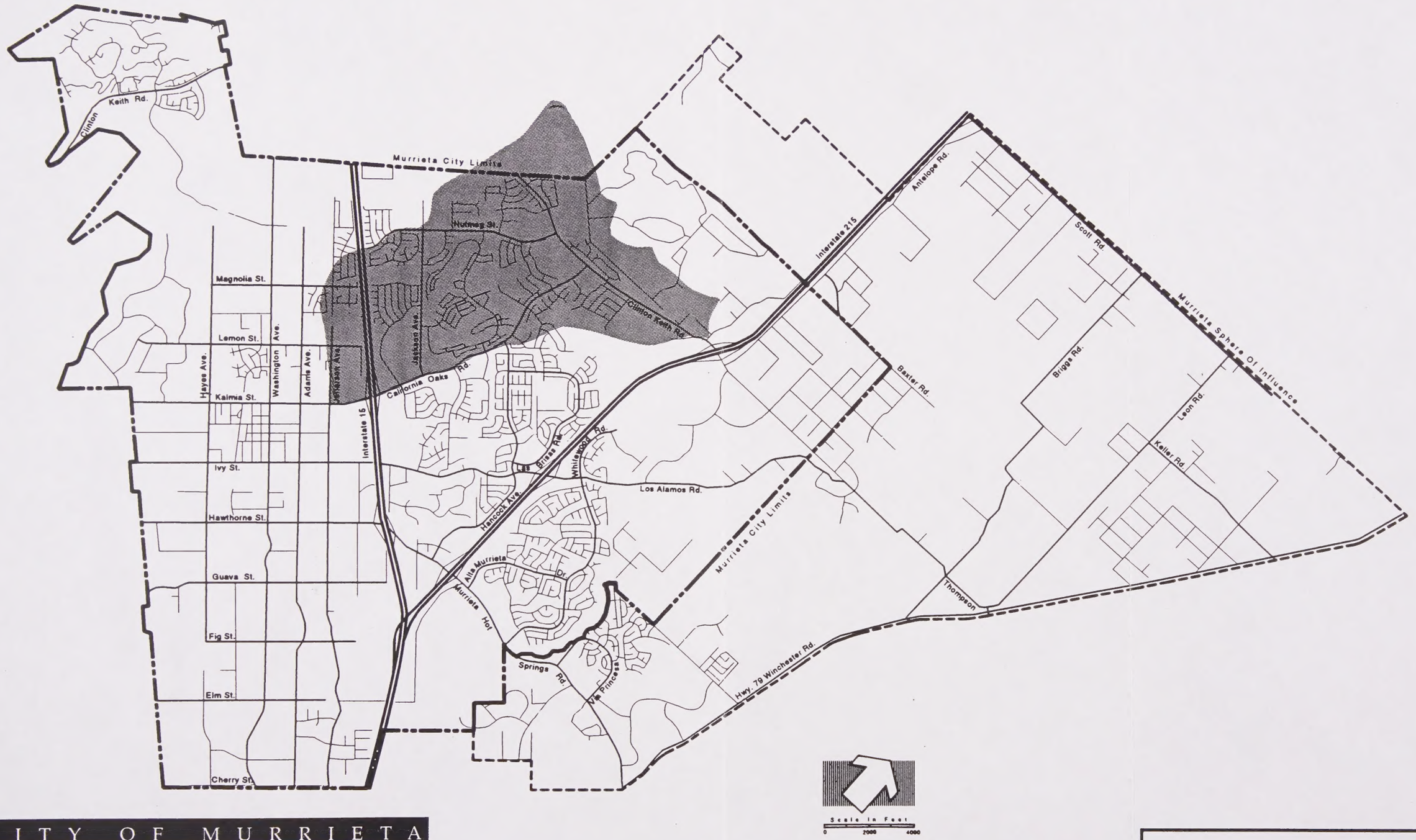


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Subsidence Hazard Zone

FIGURE 3.1-6



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Special Geologic Report Zone

FIGURE 3.1-7

ENDNOTES

1. Kennedy, M.P., *Recency and character of faulting along the Elsinore fault zone in southern Riverside County, California*, California Division of Mines and Geology, Special Report 131, 1977, 12 pages, 1 plate, scale 1:24 000.

2. United States Department of Agriculture, Soil Conservation Service, *Soil Survey of the Western Riverside Area, California*, _._. _____, Party Chief, Washington, D.C., 1971, map scale 1:15 840.

3. Alquist-Priolo Special Studies Zones: In 1972 the State of California began delineating Special Studies Zones around active and potentially active faults in the state. The zones are revised periodically, and extend 200 to 500 feet on either side of identified fault traces. No structures for human occupancy may be built across an identified active fault trace. An area of 50 feet on either side of an active fault trace is assumed to be underlain by the fault, unless proven otherwise. Proposed construction within the Special Studies Zone is permitted only following the completion of a fault location report prepared by a California Registered Geologist.

4. County of Riverside, Southwest Community Plan, Final Environmental Impact Report No. 217, March 1989.

5. Hart, E.W., *Fault-rupture hazard zones in California, Alquist-Priolo Special Studies Zones Act of 1972 with index to Special Studies Zones Maps*, California Division of Mines and Geology, Special Publication 42, revised 1988, up-dated 1989.

6. Richter scale: a logarithmic scale developed in 1935/36 by Dr. Charles F. Richter and Dr. Beno Gutenberg to measure earthquake magnitude by the amount of energy released, as opposed to earthquake intensity as determined by local effects on people, structures, and earth materials.

7. Ziony, J.I., and L.M. Jones, *Map showing Late Quaternary faults and 1978-84 seismicity of the Los Angeles region, California*, United states Geological Survey, Miscellaneous Field Studies Map, MF-1964, 1989.

8. Maximum credible earthquake: the largest Richter magnitude (M) seismic event that appears to be reasonably capable of occurring under the conditions of the presently known geological framework.

9. Hart, 1988, op.cit.

10. Wallace, R.E. (Ed.), *The San Andreas Fault System, California*, United States Geological Survey, Professional Paper 1515, 1990.

11. Riverside County General Plan, Second Edition Amended Through December 31, 1986.

12. Borcherdt, R.D., et al., *Maximum earthquake intensity predicted on a regional scale*, United States Geological Survey, Miscellaneous Field Investigations Map MF-709, 1975, scale 1:125 000.

13. Borcherdt, et al., 1975, op. cit.

14. Hart, 1988, op. cit.

15. Pacific Soils Engineering, Inc., Murrieta Special Geologic Study Zone Report, 23 March 1992.

HYDROLOGY AND WATER QUALITY

SECTION 3.2

3.2 HYDROLOGY AND WATER QUALITY

INTRODUCTION

This section describes regional hydrological resources, including surface runoff, groundwater resources and water quality as they relate to the study area. Reports and data from the County of Riverside Flood Control District, California State Water Resources Control Board, city of Murrieta, and the Federal Emergency Management Agency were used as sources for the following analysis.

SURFACE WATER

The city of Murrieta encompasses approximately 25 square miles within the Murrieta Valley. The Santa Ana Mountains and the Santa Rosa Plateau are located directly to the west, the Santa Margarita and Agua Tibia ranges are to the south, and the San Jacinto ranges lies approximately 35 miles to the east. The elevations within the study area range from approximately 1,030 feet in the Murrieta Valley to 2,120 feet in the rolling hillsides to the north and to 1,620 feet in the steep hillsides of Slaughterhouse Canyon in the west of the study area.

Both the city of Murrieta and the sphere of influence area (General Plan Area) lie within the inland portion of the Santa Margarita River basin, which encompasses an area of approximately 750 square miles. Murrieta Creek and Temecula Creek are the main tributaries of the Santa Margarita River. Murrieta Creek flows southeasterly through the Murrieta Valley for 14 miles before joining Temecula Creek at Temecula Canyon to form the Santa Margarita River, which drains into the Pacific Ocean near the southern boundary of Camp Pendleton. Murrieta Creek currently remains a natural watercourse running from the northern city limit, along the Rancho Temecula Line, to the southern city limit at Cherry Street. Currently. the Riverside County Flood Control and Water Conservation District is proposing to improve 11 miles of the Murrieta Creek from Rancho California Road in Temecula to upstream of Clinton Keith Road north of the Murrieta city limits, to provide 100-year flood protection to existing development. The improvements involve the construction of a trapezoidal channel with a bottom width of 60 to 250, a average depth of 15 to 20 feet and side slopes of 2:1. The channel would have a soft bottom and side slopes lined with open-celled concrete block mattress or rock riprap. Native woody riparian vegetation strips are planned to mitigate the loss of naturally occurring riparian vegetation.

In its unimproved state, Murrieta Creek lacks the capacity to safely convey 100-year storm flows through the city. The fourteen miles of Murrieta Creek drain an area of 220 square miles or approximately 37% of the entire upper watershed. A network of washes and intermittent stream courses also occur throughout the area collecting seasonal runoff from slopes and valley floors and bringing it towards the creek.

Major tributaries to Murrieta Creek include Santa Getrudis Creek, Tucalota Creek, and Warm Springs Creek. Warm Springs Creek meanders southwesterly for twenty-one miles from its headwaters in the Domenigoni Valley to its confluence with Murrieta Creek in the southern part of the city of Murrieta. It drains extensive valley and upland areas, and flows through the Murrieta Hot Springs area. The majority of Warm Springs Creek is not well-defined and remains undeveloped at this time. The Warm Springs Channel runs from Murrieta Creek to Interstate 15 and is improved along part of its length. At a constant basewidth of 45-feet and depth of 14-feet, this channel is considered adequate to transport flows generated during a 100-year period.

Storm runoff represents the prime source of surface water in the Murrieta Creek basin. Surface water sources also include groundwater from springs, agricultural runoff, and occasionally snowmelt. Within the study area, streamflow is generally ephemeral, although some sections exist which have perennial, standing, or flowing water. Streamflows for Murrieta Creek have been highly variable. In addition to its seasonal character, flows may vary year to year from a mere 280 acre feet (1963-1964) to 32,500 acre feet (1937-1938). The calculated flow rate expected in a 100 year storm is 34,000 cubic feet per second.

DRAINAGE, FLOODING, AND FLOOD CONTROL FACILITIES

Floodplain Studies

Many areas of the city have a history of severe flooding associated with overflow from the Murrieta Creek and its tributaries. Flooding occurs during periods of heavy runoff. In response to the serious floods of 1938, the Murrieta Creek flood channel was constructed by Riverside County in 1939. In its current unimproved state, Murrieta Creek lacks the capacity to accommodate a 100 - year flood, and it is expected that in such an event severe and extensive flooding could occur in the City. Part of the problem is associated with the poor hydraulics associated with the confluence of the Murrieta and Temecula creeks. Much of the Murrieta Creek area and sections along Warm Springs Creek are currently without formal flood control systems and, as a result, drainage, even with moderate rain, is haphazard in the less developed areas of the city. Stretches of Murrieta Creek and its tributaries also experience severe bank erosion which further contributes to the city's flood control problem. During the floods of 1980, severe erosion of Murrieta Creek in Temecula undermined structures on one property and threatened other commercial properties. During minor storms in February of 1992, bank erosion exposed leach fields and septic tanks serving private residences on the banks of the creek near Kalmia Street, causing raw sewage to discharge into the creek. During the same storm, portions of the city were isolated by the closure of roadways at 15 separate locations.

As part of the National Flood Insurance Program administered by the Federal Insurance Administration, floodplain studies have been performed for various communities in Riverside County, including the study area. In order to provide a national standard without regional discrimination, the one-hundred year flood has been adopted by the Federal Insurance Administration as the basis for floodplain management procedures. The five-hundred year flood is utilized to indicate areas of additional risk within a community. The results of these studies are Flood Insurance Rate Maps (FIRM). Based on detailed

analysis, these maps identify 100- and 500-year flood boundaries, areas of 100-year flood hazard, actuarial rate zones, base flood elevations and, in some cases, limits of the 100-year floodway. Areas of 100-year flood inundation are shown on Figure 3.2-1.

A Master Drainage Plan prepared for the Murrieta Creek area by the Riverside County Flood Control and Water Conservation District evaluates drainage needs and proposes and economical drainage plan which would provide flood protection for both existing and future development in the City. Improvements are proposed for the Murrieta Creek and its tributaries.

Drainage and Flood Control Facilities

Prior to the incorporation of the city of Murrieta, flood control facilities were approved and maintained by two agencies:

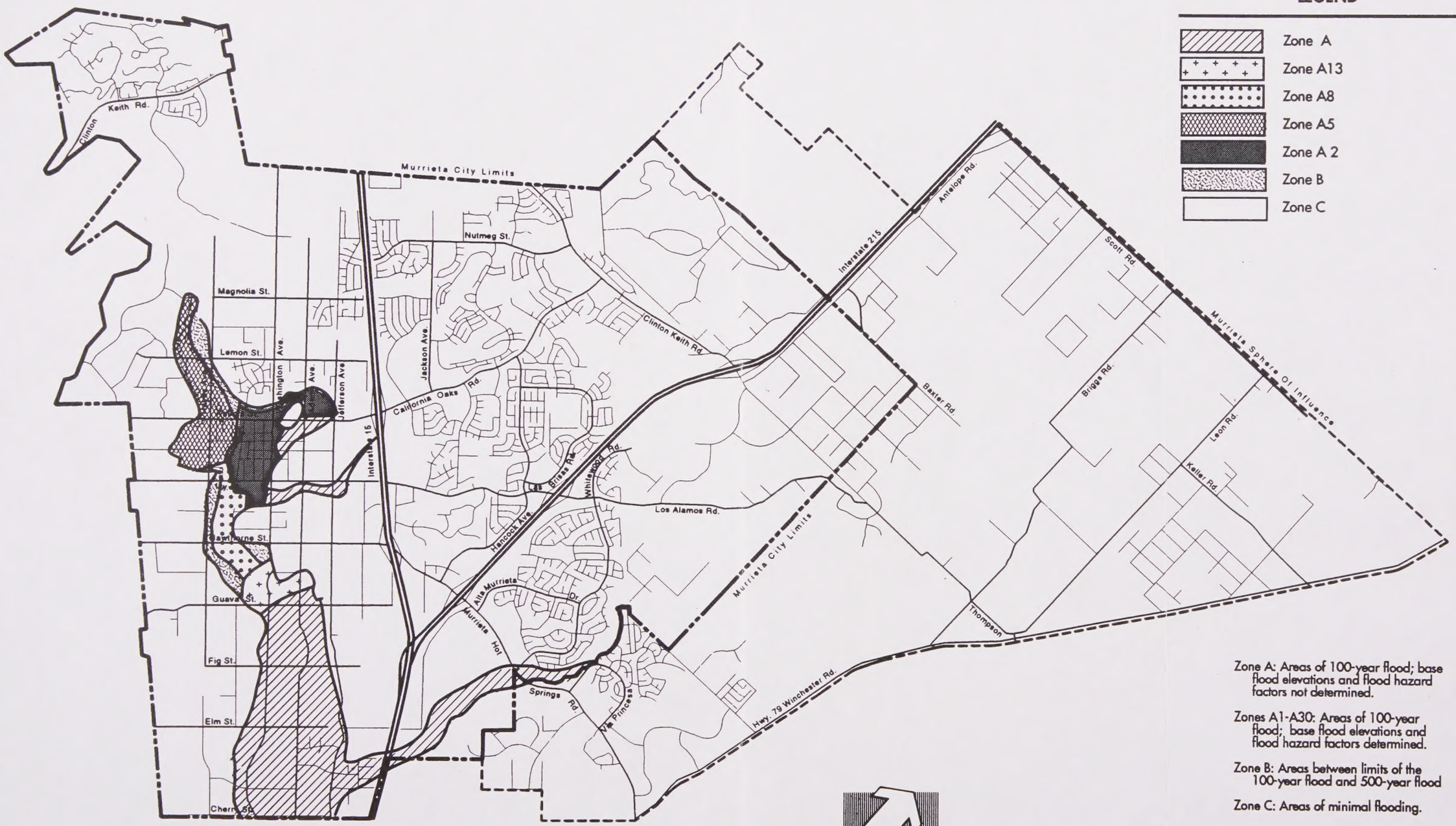
- Riverside County Flood Control and Water Conservation District (RCFC & WCD)
- Riverside County Transportation Department

As regional flood control agencies, RCFC & WCD have the responsibility of planning, constructing and operating regional and local facilities, facilities greater than 36" in diameter. Planning studies, known as master drainage plans, are prepared to guide the development of flood control systems within a basin. To provide money for construction, RCFC & WCD has adopted a fee structure, based on undeveloped acreage, through the creation of area drainage plans.

The Riverside County Transportation Department only maintains storm drains 36" and smaller and does not participate in construction activities. These drains are generally funded by individual projects and are not considered a part of any master or area drainage plan.

Major channels and storm drains are considered regional facilities and are under the jurisdiction of the Riverside County Flood Control and Water Conservation District. Other storm drain facilities are locally controlled and are the responsibility of the city of Murrieta or, in some cases, the Riverside County Transportation Department.

Existing facilities were identified through the use of as-built drawings, atlas maps, specific plan documents and field reconnaissance. Portions of the city are served by storm drains and catch basins constructed as the result of development which has occurred over the years. The majority of these facilities are considered local. The majority of the regional facilities, as proposed in the Murrieta Creek Area Drainage Plan discussed below, remain unconstructed at this time due to lack of funds or regulatory permits.



Zone A: Areas of 100-year flood; base flood elevations and flood hazard factors not determined.

Zones A1-A30: Areas of 100-year flood; base flood elevations and flood hazard factors determined.

Zone B: Areas between limits of the 100-year flood and 500-year flood

Zone C: Areas of minimal flooding.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Federal Emergency Management Agency Flood Zone Map

FIGURE 3.2-1

The following information on local flood control facilities was obtained from Riverside County Flood Control and Water Conservation District, private developers, and field reconnaissance. Local facilities in the area consist primarily of highway culverts and bridges on Interstate 15, and facilities built in conjunction with commercial and industrial developments.

Line G

Line G of the Murrieta Creek Area Drainage Plan is designed to relieve flooding along an un-named wash roughly paralleling Nutmeg Street. As planned, Line G will follow the alignment of the un-named wash from Murrieta Creek to Jefferson Avenue.

Current construction along Line G is the extension of this facility from Jefferson Avenue to Interstate 15. Constructed as a concrete-lined trapezoidal channel, Line G has adequate capacity to convey 100-year storm flows from Interstate 15 to downstream of Jefferson Avenue. Below Jefferson Avenue, the storm flows are spread back into the natural channel.

Line F

Line F of the Murrieta Creek Area Drainage Plan is designed to help relieve flooding in Old Town Murrieta, upstream of Ivy Street. As planned, Line F will follow an alignment roughly parallel to Ivy Street between Interstate 15 and Murrieta Creek.

Current construction along the Line F alignment occurs between Washington Avenue and Murrieta Creek. Constructed as an un-lined earthen channel of varying width and depth and trapezoidal cross section, Line F safely conveys 100-year storm flows from Washington Avenue to Murrieta Creek.

Line F-1

Line F-1 of the Murrieta Creek Area Drainage Plan is designed to help relieve flooding in the floodplain area upstream of Kalmia Street. As planned, Line F-1 will follow an alignment parallel to Adams Avenue, then arc through the intersection of Magnolia Street and Jefferson Avenue, finally terminating at Interstate 15.

Current construction along the alignment Line F-1 occurs between Jefferson Avenue and Interstate 15. Constructed as a 6.5-foot deep and 6-foot wide concrete-lined trapezoidal channel, Line F-1 adequately conveys 100-year storm flows from Interstate 15 to downstream of Jefferson Avenue. Below Jefferson Avenue, the storm flows are spread back into their natural channels and spread across the valley floor in a broad floodplain.

Line F-3

Line F-3 of the Murrieta Creek Area Drainage Plan is designed to help relieve local flooding along Washington Avenue upstream of Kalmia Street. As planned, Line F-3 will follow an alignment parallel to Washington Avenue 1000-feet northwest of Tenaja Road.

Currently, Line F-3 built-out along the above described alignment. Designed to convey discharges generated during a 10-year event, Line F-3 consists of reinforced concrete pipe ranging in size from 42-inches to 54-inches.

Clay Street Channel

During the development of the Murrieta Creek Area Drainage Plan many facilities were identified as existing. The Clay Street Channel is one of those facilities.

Constructed as an un-lined earthen channel, the Clay Street Channel runs from Kalmia Street southerly to Ivy Street to a confluence with Murrieta Creek. The cross-section of this channel varies widely along its alignment, averaging 10-feet wide and 2-feet deep. In this state, it is evident this channel lacks the capacity to convey 100-year storm flows adequately. In addition, there are several driveway and street crossings consisting of triple 36-inch reinforced concrete pipe which lack the capacity to convey similar storm flows.

Developer Funded Drainage Facilities

Drainage facilities consisting mainly of underground closed conduits have been constructed in many areas where residential and commercial development has taken place. These facilities are an outgrowth of various development related activities throughout the plan area.

As development applications progress through the approval process, certain conditions are placed upon them. Invariably, numerous conditions will deal with the protection of a project site and upstream and downstream properties from storm flows. The resulting system will most often be composed of closed conduits such as the Via Segovia drain within California Oaks and the Coliseum Way storm drain. Facilities designed for and installed by developers are numerous, and are designed to very rigid criteria to accommodate conveyance of specific design flows.

Master Drainage Plan for the Murrieta Creek Area

In March of 1986, the Riverside County Flood Control and Water Conservation District completed the Master Drainage Plan for the Murrieta Creek Area. The purpose of the plan was to investigate and evaluate drainage needs within the Murrieta Creek area and to propose an economical drainage plan which would provide flood protection for both existing and future development.

Once implemented, the Master Plan would provide the major flood control facilities necessary to relieve the area of its most serious flooding problems. The benefits of the Master Plan facilities include the

removal of floodplain status from a large land area adjacent to Murrieta Creek, the control of severe bank erosion along Murrieta Creek and its tributaries, and the mitigation of severe flooding problems in Old Town Murrieta.

The drainage area considered in this plan consists of the 220 square mile watershed tributary to Murrieta Creek upstream of its confluence with Temecula Creek. The area is divided into five major watersheds: the Wildomar Valley, Murrieta Valley, Warm Springs Valley, Santa Gertrudis Valley and the Murrieta Valley, all of which comprise the Murrieta Creek Watershed. Portions of the Warm Springs Valley, Santa Gertrudis Valley and Murrieta Valley watersheds lie within the Murrieta City limits and sphere of influence.

The recommended improvements consist of the channelization of Murrieta Creek and its major tributaries and include several concrete-lined open channels and a small network of underground storm drains. The proposed system will carry runoff through the rapidly developing Murrieta Valley, to an outlet at the valley's south end, where Murrieta Creek and Temecula Creek meet to form the Santa Margarita River.

Murrieta Creek Area Drainage Plan

The Murrieta Creek Area Drainage Plan was prepared through the merger of the Master Drainage Plan for the Murrieta Creek Area, dated March, 1986, and the Master Drainage Plan for the Wildomar Area, dated August, 1980. This Area Drainage Plan for controlling flood and drainage problems in the Murrieta Creek Area concludes that certain flood and drainage facilities are critically needed for an orderly and economical development of the area.

This plan consists of the improvement of Murrieta Creek, as well as the construction of numerous side drains. The facilities proposed by the plan range in size from a 225-foot wide, 14-foot deep Murrieta Creek channel designed to control more than 38,000 cubic feet per second (cfs), to a 36-inch reinforced concrete pipe designed to convey 50 cfs. Only facilities 36 inches or greater in diameter are included as part of land development activities and will be required as necessary.

The drainage problems and proposed solutions vary widely within the watershed. Therefore, in an effort to fairly apportion the drainage fee, the overall drainage area has been divided into five sub-watersheds. These five sub-watersheds are identical to those identified in the Master Drainage Plan for the Murrieta Creek Area. Each of the five sub-watersheds has a fee associated with it that is more representative of its flow contribution and benefits realized.

It should be noted that the proposed Murrieta Creek Channel, along with the Santa Gertrudis and Warm Springs Channels, are the only proposed improvements that are considered "major facilities" and are supported by payment of drainage fees within each sub-watershed. However, drainage fees collected from both the Santa Gertrudis Valley and Warm Springs watersheds, besides being used for the Santa Gertrudis

and Warm Springs Channels, are for the improvement of only that portion of Murrieta Creek below their confluence. On the other hand, drainage fees collected in the Murrieta Valley sub-watershed are intended for use over the entire length of Murrieta Creek.

All of the other proposed drains are regarded as "local facilities" and are to be funded by payment of drainage fees collected in the sub-watersheds in which they are located. The distribution of fees to "major" and "local" facilities is shown in Table 3.2-1. These fees are those set forth by Amendment No. 1 to the Murrieta Creek Area Drainage Plan, Resolution No. 90-059 adopted January 23, 1990.

TABLE 3.2-1
MURRIETA CREEK AREA DRAINAGE PLAN
FEE DISTRIBUTION

Sub-Watershed	Fee Per Acre	Percentage Applied Toward Local Facilities	Major Facilities*		
			M.C.	S.G.	W.S.
Wildomar Val	$4,462	56.97%	43.03%	0	0
Murrieta Val	$3,503	42.58%	57.42%	0	0
Temecula Val	$1,970	4.02%	95.98%	0	0
Santa Gertrudis Val	$1,023	3.92%	43.29%	52.79%	0
Warm Springs Val	$ 503	3.23%	77.00%	0	19.77%

*Murrieta Creek, Santa Gertrudis Creek, and Warm Springs Creek Channels, respectively.

Dam Inundation

In addition to the flood hazard currently posed by the Murrieta Creek, the City is also subject to potential flooding from dam inundation. Flooding as a result of dam failure is a remote event, which must, however, be considered and recognized in city planning.

Lake Skinner, the only major surface reservoir in the Murrieta Creek watershed, is located on Tucalota Creek, a tributary to Santa Gertrudis Creek. Lake Skinner, located approximately 4.5 miles east of the city, owned and operated by the MWD, is supported by an earthen dam with 43,800 acre feet of capacity. An inundation study completed for the dam indicates that the city would be affected by failure of the dam, with waters moving down Santa Gertrudis Creek causing flooding in the extreme southern portion of the city (Figure 4.3-2). The limits of the inundation areas are conservative engineering estimates based on a sudden release of all water from a full reservoir.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Source: County of Riverside General Plan 1986, Dam Inundation Areas 100 yr. Flood Plain and Area Drainage Plans.

Lake Skinner Potential Dam Inundation Area

FIGURE 3.2-2

Plans are currently being developed by the Metropolitan Water District for the proposed Eastside Reservoir Project. While flood maps associated with the proposed reservoir were not available for this study, it is assumed that portions of the General Plan area could be subject to flooding in the event of dam failure. However, dam failure is considered an extremely remote possibility as dams are designed at a strength much stronger than necessary to survive the largest magnitude possible earthquake without affecting the dam structure. Statistical risk analysis performed as part of the Eastside Reservoir Project EIR indicated the potential of dam failure to be less than one chance in one hundred million under the worst foreseeable earthquake event.

Ground Water

Ground water refers to that water which exists in natural water systems below the earth's surface. There, it flows through porous water bearing formations called aquifers. For many years wells have been driven into these underground reservoirs to extract water. Ground water remains a major source of supply for inland areas. Several ground water basins underlie the Plan Area. The Murrieta-Temecula Basin and the French Basin are the most significant.

The Murrieta-Temecula Basin underlies about 60,000 acres and is the largest ground water basin in the hydrologic unit assigned to the area drained by the Santa Margarita River. The basin has an estimated storage capacity of 1.2 million acre feet. Its boundaries extend well beyond the Murrieta study area, from the Murrieta graben in the north to the base of the Aqua Tibia Mountains in the south. It extends east from the Santa Rosa Plateau far into the mesa and valley areas. It underlies the entire Murrieta Creek channel as well as much of Warm Springs and Santa Gertrudis creeks. It also lies under large portions of Pechanga and Temecula creeks. The various creeks are important sources of recharge water for the underlying groundwater basin. Water flows out of the basin toward the Lake Elsinore area in the northwest and rises to the Santa Margarita River in the southwest. Many of the wells producing water from this ground water basin are located in the Murrieta area. Water pumped from this basin is used for both irrigation and domestic use.

French Basin extends into the Murrieta Plan Area from the northeast. Underflow from Auld Basin as well as surface streams charge the basin. Water outflows by surface discharge to Warm Springs Creek which crosses French Valley. The basin underlies approximately 3,500 acres.

To ensure that safe yields of ground water basins are not exceeded, they are managed through adjudicated settlements or agreements which control extractions and replenishment. Replenishment of ground water supplies may be accomplished through natural rainfall or stream percolation or the application of flood, reclaimed, or imported water to recharge areas.

There are two concerns with the projected rapid urbanization of the area. In addition to the increased demands on local water resources, development tends to decrease the natural recharge of ground water. The replacement of pervious surfaces with impervious ones and the resulting rapid run-off of rainwater, as well as, the collection of water into concrete channels inhibits natural water infiltration.

Water Quality

Regulation

The level or suitability of water for different uses, particularly, human contact, is defined by varying drinking water standards. Federal drinking water standards set limitations for particular chemical constituents, establish maximum contaminant levels, and set aesthetic standards related to odor and taste for potable water delivered by local agencies. In addition to the federal drinking water standards, the State of California Department of Health Services also sets levels for certain organic chemicals and determines water quality objectives for identified streams, lakes, groundwater basins, and coastal and near-shore ocean waters. Under the California Health and Safety Codes, the California Safe Drinking Water Act falls between sections 4010 and 4037.5.[1] Federal and State drinking water standards are summarized in Table 3.2-2.

Wastes discharged as a result of industrial activity become potential contaminants of fresh-water zones when they are discharged into natural or artificial water courses that traverse the area, or are discharged at land surface in sumps and pits and allowed to evaporate and seep away. The Federal Water Pollution Control Act requires discharges (from both point and non-point sources) into navigable waters to meet stringent standards regulated under the National Pollution Discharge Elimination System (NPDES). On February 16, 1990, the U.S. Environmental Protection Agency published regulations that established requirements for application for stormwater permits for specified categories of industries. The regulations require that discharges of stormwater from construction activity of five acres or more must be regulated as an industrial activity and covered by an NPDES permit.

Construction activity includes clearing, grading, or excavation. Construction activity on sites of less than five acres requires a permit if the construction is part of a larger common plan of development. Construction activity does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility, nor does it include emergency construction activities required to protect public health and safety. The permit requires that all owners of land where construction activity occurs to:

- File a Notice of Intent (NOI) and appropriate fee for construction activities to the State Water Resources Control Board.
- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which identifies pollutant sources that may affect the quality of discharges of storm water associated with construction activity and to identify, construct and implement storm water pollution prevention measures to reduce such pollutants. An Erosion and Sediment Control Plan is a component of this plan.

TABLE 3.2-2
WATER QUALITY STANDARDS: Constituent Concentrations

		EPA Drinking Water Regulations			California Drinking Water Standards			
						Secondary		
	Constituent	Interim Primary Standards	Interim Secondary Standards	Primary Maximum Contaminant Levels (MCLs)	MCLs	Recommended	Upper	Short-Term
Major Minerals	TDS		500			500	1,000	1,500
	Sulfate		250			250	500	600
	Chloride		250			250	500	600
	Fluoride	1.80			1.8			
	pH unit		6.5-8.5					
	Nitrate	10 as N		45 as NO_3				
Trace Metals	Arsenic	0.05		0.05				
	Barium	1.00		1.00				
	Cadmium	0.01		0.01				
	Chromium	0.05		0.05				
	Copper		1.00		1.00			
	Iron		0.30		0.30			
	Lead	0.05		0.05				
	Manganese		0.05		0.05			
	Mercury	0.002		0.002				
	Selenium	0.01		0.01				
	Silver	0.05		0.05				
	Zinc		5.00		5.00			
Organic Chemicals	MBAS		0.50		0.50			
	Endrin	0.0002		0.0002				
	Lindane	0.004		0.004				
	Methoxychlor	0.10		0.1				
	Toxaphene	0.005		0.005				
	2,4-D	0.10		0.1				
	2,4,5-TP	0.01		0.01				
	Total THMs	0.10		0.10				

Source: *Advanced Planning Report, Volume 1, Technical Memoranda, Wastewater Program,* Management Division Department of Public Works, Bureau of Engineering, City of Los Angeles, February, 1990.

Units in mg/l unless noted.

- Perform inspection of storm water pollution prevention measures and develop and implement a monitoring plan.

Existing Water Quality

For the period 1976 to 1986, concentrations of TDS in Murrieta Creek averaged 895 mg/l. From analysis of the water quality record, TDS concentrations appear to be lower during time of significant streamflow during January through April. Significant variations in the concentrations of nitrate and phosphate occurred in Murrieta Creek from 1976 to 1986. Concentrations of both nitrate and phosphate exceeded water quality objectives for portions of that period. Concentrations of heavy metals were generally at or below the level of detection.

Ground water quality varies within the Murrieta and French basins. Water extracted at higher elevations and deeper unconfined aquifers is generally of higher quality. Water extracted from the shallow unconfined Alluvium formation has total dissolved solids (TDS) concentrations ranging from 300 parts per million (ppm) to 1,000 ppm TDS. Water from wells located in the deeper confined aquifer has TDS concentrations ranging from 250 ppm to 700 ppm.

ENDNOTES

1. West's Annotated California Codes, California Safe Drinking Water Act: Section 4010 (Public Water Systems), Section 4011 (Permits), Section 4021 (Drinking Water Program), Section 4027 (Exemptions and Variances), Section 4028 (Public Notification), Section 4031 (Violations), Section 4032 (Remedies), Section 4037 (Judicial Review), Section 4037.5 (Crimes and Penalties)

BIOLOGICAL RESOURCES

SECTION 3.3

3.3 BIOLOGICAL RESOURCES

INTRODUCTION

This section discusses the biological resources of the City of Murrieta MEA study area (city limits and sphere of influence) and pertinent laws, regulations, and resource-protection programs. Particular attention is focused upon sensitive species and natural communities.

The city of Murrieta is located northeast of the Santa Rosa Plateau, at the junction of Interstate Highways 15 and 215. The city and its sphere of influence range in elevation from approximately 1,030 feet in the valley to 2,120 feet on the hillside in the north portion of the study area. A variety of habitat types typical of Southern California occur within the plan area.

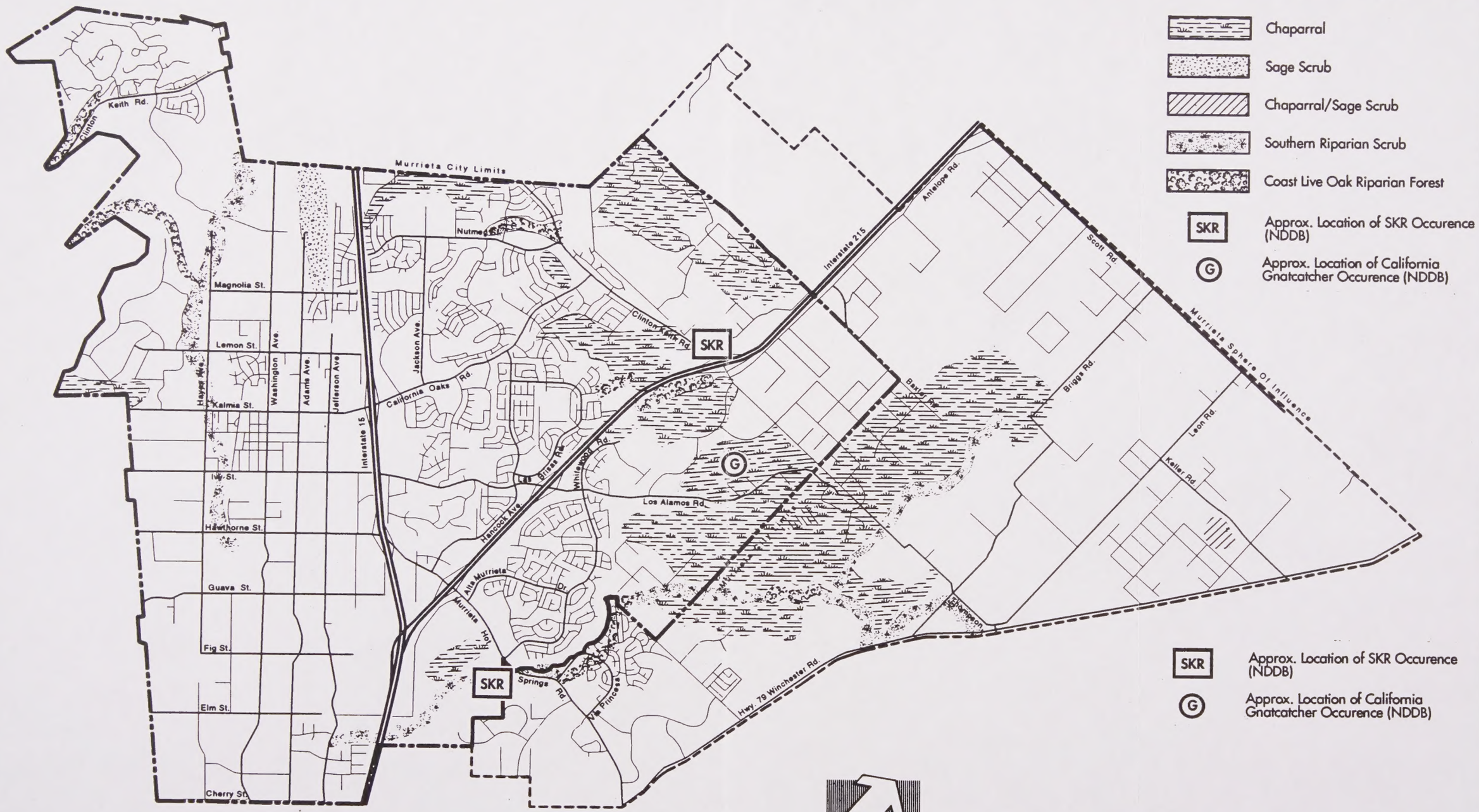
Methods used to assemble the biological information included a review of occurrences of sensitive species recorded in the California Natural Diversity Data Base (NDDB) and review of literature (especially environmental documentation for projects that are within or near the city). Plant communities were mapped on the basis of a preliminary field reconnaissance and study of false-color infrared photographs taken in 1989. Much of the acreage of the planning area could not be visited on foot, so some sensitive biological resources may be present, but are not mapped. Site-specific surveys would be necessary to fully document all resources present within the boundaries of any proposed projects.

HABITATS PRESENT

Plan Area

Habitats Present

Biological communities found within the City limits and sphere of influence are discussed here primarily in terms of the California Natural Diversity Data Bank (CNDDB) classification system.[1] However, not all habitats found in the City correspond perfectly to the CNDDB community types, and the two predominant community types, urbanized and agricultural lands, are not discussed in the CNDDB system. Habitat types occurring within the General Plan area are: Urbanized Areas, Non-Native Grasslands, Valley Needlegrass Grassland, Agricultural Lands, Chaparral, Coastal Sage Scrub, Riparian Scrub and Forest, and Wetlands. Biological communities found within the City limits and sphere of influence are summarized below in order of approximate acreage covered. Figure 3.3-1 illustrates the approximate location and extent of the different habitat types within the General Plan area.



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

This map is intended for conceptual use only. Areas shown are not accurate on a parcel by parcel basis and are only intended to illustrate large concentrations of sensitive biotic resources. Other significant habitat areas not shown on the map may exist within the General Plan area. Areas of grassland are not indicated due to their large area of coverage and their comparatively low habitat value within the General Plan area.

Murrieta Biological Communities

FIGURE 3.3-1

Urbanized Areas

Although urbanized areas have habitat values that are severely altered from their original condition, they still provide habitat for some native resident and migratory wildlife species. The primary habitat value of urbanized areas is provided by the abundance of landscaped trees and shrubs that are universally planted in developed areas. Several species of birds native to California forage extensively in urban and suburban areas. Wherever native trees, such as oaks, sycamore, and walnut, are used in street median plantings, they offer foraging, roosting, and even nesting habitat for native birds and other wildlife. Urban areas occur throughout the central and southeast portion of the General Plan area and are located approximately in areas near the freeways. The General plan area is significantly divided by two major interstate freeways passing through the plan area in a north to south direction.

Non-Native Grassland

Almost all of the grasslands presently occurring within the City are dominated by non-native species. California buckwheat (*Eriogonum fasciculatum*) is an important native component of these grassland areas. It may occur as scattered individuals, or form a dominant low-shrub layer. Probably, many of these areas once supported sage scrub and/or chaparral and are now undergoing vegetation succession from use as pastures and croplands back to some form of scrubland.

Nearly all of the areas that might once have supported native grassland composed of perennial bunch grass (i.e. *Stipa* spp.), are now dominated by mostly non-native annual species. However, some small areas of native grassland may occur as remergent of historic flora and develop on heavier, more clayey soils, or as small patches of grassland within other habitat types, such as oak woodlands or chaparral.

Grasslands offer excellent habitat for several types of native wildlife, including snakes, rodents (such as Stephens' kangaroo rat, discussed in detail below), song birds, and birds-of-prey. Raptors that use grasslands within the City would likely include a variety of hawks and owls. Non-Native Grasslands occur through the site in non-urbanized areas mostly in the northern and eastern portions of the General Plan area.

Agricultural Lands

A substantial portion of the City has been used, or continues to be used, for agricultural purposes such as grazing or dry-farming of feed grains and hay. Despite the disturbance of vegetation and land that is inherent in agricultural activities, these areas continue to provide habitat values similar to grasslands for wildlife.

Wildlife species such as small birds and rodents can find abundant food and cover in the on-site Agricultural habitat; this in turn provides a prey base for wide ranging and migratory predators such as birds-of-prey, coyotes, and foxes.

Field edges and irrigation channels associated with agricultural lands within the General Plan area are important habitat features that provide a source of drinking water, cover, nesting substrate and also serve as movement corridors. The potential occurrence of shallow water shorelines along the irrigation channels may provide foraging habitat for wading birds.

Agricultural lands tend to have healthy rodent populations, that offer good foraging opportunities for mammalian and avian predators. Agricultural lands form a mosaic pattern of different agricultural land use practices such as equestrian areas and croplands that support different types of crops, these areas occupy the majority of the northwestern portion of the General Plan area.

Chaparral

The chaparral habitat on site is, overall, best characterized as southern mixed chaparral dominated by chamise (*Adenstoma fasciculatum*) scrub oak (*Quercus dumosa*), California buckwheat (*Eriogonum fasiculatum*), and *ceanothus* spp. Many other species are present as a variable, usually minor, component of the vegetation. Some areas correspond better to other chaparral types such as chamise chaparral or *Ceanothus* chaparrals.

Within the Murrieta area, the largest contiguous expanses of chaparral occurs primarily on the "Hogsbacks" next to Warm Springs Creek. Small areas also occur elsewhere, and the southwestern City boundary includes small portions of the extensive chaparral hillsides that extend up to The Nature Conservancy preserve on the Santa Rosa Plateau.

Chaparral habitat provides food and shelter for a very wide range of resident and migratory wildlife species in all groups. However, the diversity of species present declines sharply when expanses of chaparral are fragmented or isolated within developed areas with no connection to other habitat areas through riparian or other corridors.[2]

Coastal Sage Scrub

Coastal Sage Scrub habitat is characterized by a mixture of soft-leaved (malacophyllous) shrubs which tend to have aromatic foliage. These shrubs are typically shorter than chaparral shrubs. Many dominant species lose their larger winter leaves, retaining just the smaller leaves through summer. Principal species vary from area to area with slope exposure and elevation, thereby giving a great deal of local variation to the habitat. The principal dominant species include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and several species of true sage (*Salvia* spp.). The number of perennial and annual herbs varies, but they are generally low in cover and abundance. The animal species associated with coastal sage scrub include the San Diego cactus wren (*Campylorhynchus brunnecapillus sandiegensis*), California gnatcatcher (*Polioptila californica*), San Bernadino kangaroo rat (*Dipodomys merriami parvus*), and Stephens' kangaroo rat (*Dipodomys stephensi*).

Two types of coastal sage scrub occur in the region, Diegan and Riversidian. Because the species composition and overall habitat structure of these two community types is so similar, and because some species of concern typical of the sage scrub habitat may be found in either type, it is probably best to regard them as variants of the same community type. One area of very typical Coastal Sage Scrub that was examined in detail, near Chaney Hill, corresponds more closely to the Diegan type than to Riversidian. Additional patches of Coastal Sage Scrub occur within chaparral and other habitat types.

Riparian Scrub and Forest

Although a few riparian forest tree species are scattered along major creeks, only small areas of actual riparian forest community occur within the general plan area. Some of these riparian areas are very rich and correspond most closely to the Southern Coast Live Oak Riparian Forest, or are transitional to Southern Cottonwood-Willow Riparian Forest. Nearly all of the oak woodlands within the City occur as riparian forest. The predominant species in oak woodlands within the City is coast live oak, but Engelmann oaks are frequently scattered among them. Southern Riparian Scrub also occurs, probably more extensively than riparian forest. Mulefat Scrub occurs extensively along Murrieta Creek; Southern Willow Scrub is more common elsewhere, such as along Warm Springs Creek. However, these two types of riparian scrub often occur as a mosaic.

Riparian communities have extremely high wildlife values for many reasons. They are usually the only source of water, and they provide nesting and denning habitat for many species, including some candidate and endangered species such as the least Bell's vireo. Riparian habitats generally constitute the only corridors of natural habitat through developed areas, thus permitting daily or seasonal wildlife movements that are essential in maintaining ecological stability and species diversity in areas that are not developed. These ecological functions are often compatible with use of riparian corridors for passive recreation (paths), if measures are taken to minimize habitat impacts that could result from walking or use of bicycles off of established paths.

Within the City, extremely high quality riparian habitat is present along Warm Springs Creek and along small reaches of unnamed intermittent creeks near I-215 and the northern City boundary. Although the riparian habitat along much of the length of Murrieta Creek within the City has been degraded by erosion and the construction of levees, some areas of riparian oak forest and mulefat scrub persist, and the creek as a whole has great restoration potential. The importance of the potential for restoration of this corridor is heightened by the proximity of the Santa Rosa Plateau, and the relative ecological integrity of the intervening chaparral hillsides and canyons (Cole, Miller, and Sandia Canyons).

Currently, the Riverside County Flood Control and Water Conservation District is proposing to improve 11 miles of the Murrieta Creek to provide 100-year flood protection to existing development. The project being recommended would avoid the most valued aquatic areas upstream of the Temecula Creek/Murrieta Creek confluence, and provide on-site mitigation for all impacted wetlands. The proposed project would, through mitigation and preservation, provide a continuous riparian habitat corridor (with the exception of

a short reach downstream of Winchester Road) between Rancho California Road in Temecula to the end of the project area upstream of Clinton Keith Road just north of the Murrieta City limits.

Wetlands

In addition to riparian areas, much of which constitute waters of the U.S., isolated seasonal wetlands occur in topographic depressions within grasslands wherever soils are sufficiently impermeable to pond water during the rainy season. This impermeability can result either from high clay content in the topsoil or subsoil, or from proximity of bedrock to the surface. Where these conditions occur, the seasonal wetlands that form may be dominated by introduced or facultative species, or they may be vernal pools, which support a distinctive assemblage of native species, sometimes including special-status plants or invertebrates. In addition, several springs occur within the General Plan area.

Special-Status Species

For the purposes of this section, special-status species include those that are listed as rare, threatened, or endangered by either the California Department of Fish and Game (CDFG) or the U.S. Fish and Wildlife Service (USFWS); most species that are candidates for either state or federal listing; species designated as "fully protected" or "species of special concern" by CDFG; and some other species that are tracked by the California Natural Diversity Data Base but do not fall into any of the categories cited above. The California Natural Diversity Data Base (CNDDB), EIP Associates' proprietary rare plant data base, the Murrieta MEA and other relevant background information were reviewed to determine the occurrence or potential occurrence of special-status plant or wildlife species, and natural communities of special concern on or within an approximate 10-mile radius of the General Plan area. A search range of an approximate 10-mile radius is typically used to identify potential special-status species issues. A 10-mile radius encompasses a sufficient distance to accommodate for regional habitat diversity and to overcome the limitations of the CNDDB. The CNDDB is based on actual recorded occurrences and does not constitute an exhaustive inventory of every resource. The review identified recorded occurrences of 12 plant species, 12 wildlife species within an approximately 10-mile radius of the project site (See Table 3.3-1).[3]
Eight of the recorded occurrences of the species listed in Table 3.3-1 were located on the project site. The chaparral, coastal sage scrub, non-native grassland, and riparian habitats within the General Plan area support potential habitat for three of the 12 plants, and 11 of the 12 wildlife species listed in Table 3.3-1.

The Santa Rosa Plateau Ecological Reserve is located approximately one half mile west of the General Plan area. The Reserve is a cooperatively managed natural area of nearly 7,000 acres that is recognized internationally for its biological diversity, its unusual concentration of rare and endangered species of plants and wildlife, and for the degree of cooperation between federal, state, and local governments and the private sector in providing for the protection of its resources. Given the close proximity of the reserve to the General Plan area with connecting canyons, drainages and habitats, a number of species found on the reserve also have potential to exist within the General Plan area. Table 3.3-2 lists species known to occur on the reserve and, therefore, may exist within the Murrieta General Plan area.

TABLE 3.3-1
SPECIAL-STATUS SPECIES REPORTED FROM THE MURRIETA GENERAL PLAN VICINITY

Scientific Name	Common Name	Status[1] Fed/CA/CNPS[2]	Habitat	Habitat Present On Site	Seasonal Use	Occurrence On Site (Source)
		MAMMALS				
Dipodomys stephensi	Stephen's kangaroo rat	FE/ST/-	grasslands, coastal scrub, sagebrush	yes	year-round resident	yes(NDDB)
Perognathus longimembris brevinasus	Los Angeles pocket mouse	C2/CSC/-	grasslands, coastal sage	yes	year-round resident	maybe
		BIRDS				
Aquila chrysaetos	golden eagle	-/CSC/-	open grasslands, rolling foothill	yes	may forage from distant nests	maybe; occasional
Accipiter cooperii	Cooper's hawk	-/CSC/-	oak woodland, riparian, sage scrub	yes	breeding resident	maybe
Polioptila californica	California gnatcatcher	C2/CSC/-	sage scrub, coastal scrub	yes	year-round resident	yes(NDDB)
		REPTILES AND AMPHIBIANS				
Clemmys marmorata pallida	southwestern pond turtle	C2/CSC/-	open mud banks, water	unlikely	year-round resident	unknown
Phrynosoma coronatum blainvillii	San Diego horned lizard	C2/CSC/-	coastal scrub, chaparral	yes	year-round resident	yes(NDDB)

TABLE 3.3-1
SPECIAL-STATUS SPECIES REPORTED FROM THE
MURRIETA GENERAL PLAN VICINITY

Scientific Name	Common Name	Status[1] Fed/CA/CNPS[2]	Habitat	Habitat Present On Site	Seasonal Use	Occurrence On Site (Source)
Cnemidophorus hyperythrus	orange-throated whiptail	C2/CSC/-	scrub and chaparral	yes	year-round resident	maybe
		PLANTS				
Caulanthus simulans	Payson's jewelflower	C2/-/4	chaparral, sage scrub	yes	seasonally	maybe
Chorizanthe parryi var. parryi	Parry's spineflower	C2/-/-	chaparral	yes	seasonally	maybe
Polygala cornuta var. fishiae	Fish's milkwort	-/-/4	riparian	yes	seasonally	maybe
Dodecahena leptoceras	slender-horned spineflower	FE/SE/1B	sage scrub	yes	seasonally	maybe
Eryngium aristulatun var. parishii	San Diego button celery	C1/SE/1B	vernal clay pools, soils	maybe	March-June	unknown
Limnanthes gracilis ssp. parishii	Parish's meadowfoam	C2/SE/1B	vernal pools, clay soils	maybe	March-June	unknown
Orcuttia Californica	California orcutt grass	C1/SE/1B	vernal pools, clay soils	maybe	March-June	unknown
Brodiaea filifolia	three-leaved brodiaea	C1/SE/1B	vernal pools, clay soils	maybe	March-June	unknown
Navarretia fossalis	prostrate navarretia	C2/-/1B	vernal pools, clay soils	maybe	March-June	unknown
Allium fimbriatum var. munzii	Munz's onion	C1/SE/1B	marginal wetlands	maybe	March-June	unknown
Ambrosia pumila	San Diego ambrosia	C2/-/1B	marginal wetlands	maybe	March-June	unknown

TABLE 3.3-1
SPECIAL-STATUS SPECIES REPORTED FROM THE MURRIETA GENERAL PLAN VICINITY

Scientific Name	Common Name	Status[1] Fed/CA/CNPS[2]	Habitat	Habitat Present On Site	Seasonal Use	Occurrence On Site (Source)
Harpagonella palmeri	Palmer's grapplinghook	FE/-/1B	marginal wetlands	maybe	March-June	unknown

[1] *Status = Status of species relative to the Federal and State Endangered Species Acts and Fish and Game Code.*
Fed = Federal status
E = Federally listed as endangered
T = Federally listed as threatened
C1 = Category 1 comprises taxa for which the USFWS currently has substantial information on hand to support the biological appropriateness of proposing to list as endangered or threatened. Proposed rules have not yet been issued because they have been precluded at present by other listing activity.
C2 = Category 2 comprises taxa for which information now in possession of the USFWS indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat are not currently available to support proposed rules. Further biological research and field study may be needed to ascertain the status of taxa in this category, and it is likely that many will be found not to warrant listing.
C3B = Names that, on the basis of current taxonomic understanding, do not represent taxa that meet the Endangered Species Act's legal definition of species. Future investigation could lead to reevaluation of the listing qualifications of such entities.
C3C = Subcategory 3C comprises taxa that are now considered to be more abundant and/or widespread than previously thought. Should new information suggest that any such taxon is experiencing a numerical or distributional decline, or is under a substantial threat, it may be considered for transfer to Category 1 or 2
CA = California status
E = State listed as endangered
T = State listed as threatened
CSC = California Department of Fish and Game "Species of Special Concern"
FP = Fully protected against take pursuant to the Fish and Game Code
-- = No California or federal status
CNPS = California Native Plant Society Listing (does not apply to wildlife species)
1B = Plants rare, threatened or endangered in California and elsewhere and are rare throughout their range. All of the plants constituting List 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for state listing.
3 = Plants about which we need more information--a review list. List 3 is an assemblage of taxa that have been transferred from other lists or that have been suggested for consideration. Information that would allow an assignment to one of the other lists or to reject them is lacking.
4 = Plants of limited distribution--a watch list. Plants in this category are of limited distribution in California and their vulnerability or susceptibility to threat appears low at this time. However, they are uncommon enough that their status should be monitored regularly.

[2] *Species for which suitable habitat is not found on the site are listed in this column as not occurring.*

TABLE 3.3-2
LIST OF SENSITIVE SPECIES FOUND IN THE CHAPARRAL AND COASTAL SAGE SCRUB COMMUNITIES ON THE SANTA ROSA PLATEAU ECOLOGICAL RESERVE

Species/Common Name	Status[1/]			Habitat Preference	Habitat Present on Site	Seasonal Use	Occurrence on Site (Source)
	Federal	State	CNPS				
PLANTS							
Arctosaphylos peninsularis peninsular manzanita	None	None	2	Chaparral	Yes	Year-round	Yes (SRPER)
Calamintha chandleri San Miguel savory	None	CSC	None	Coastal scrub, chaparral	Yes	Seasonally	Yes (SRPER)
Mimulis diffusus Palomar monkeyflower	None	None	4	Coastal scrub, chaparral	Yes	Seasonally	Yes (SRPER)
Polygala comuta var. *fishae* Fish's milkwart	None	None	4	Coastal scrub, chaparral	Yes	Seasonally	Yes (SRPER)
Quercus engelmanni Engelmann oak	None	CSC	4	Coastal scrub, chaparral	Yes	Year-round	Yes (SRPER)
REPTILES AND AMPHIBIANS							
Cnemidophorus hyperythrus orange-throated whiptail	None	CSC	---	Coastal sage scrub, mixed chaparral	Yes	Year-round resident	Yes (SRPER)
Cnemidophorus hyperythrus multiscutatus coastal western whiptail	C2	None	---	Coastal scrub, chaparral	Yes	Year-round resident	Yes (SRPER)
Crotalis ruber ruber northern red diamond rattlesnake	C2	CSC	---	Desert chaparral	Yes	Year-round resident	Yes (SRPER)
Diadophis punctatus modestus San Bernardino ring-necked snake	C2	None	---	Chaparral, grasslands	Yes	Year-round resident	Yes (SRPER)
Lichanura trivirgata roseofusca coastal rosey boa	C2	CSC	---	Desert chaparral	Yes	Year-round resident	Yes (SRPER)
Phrynosoma coronatum blainvillii San Diego horned lizard	C2	CSC	---	Sandy soil, desert shrub	Yes	Year-round resident	Yes (NDDB)

TABLE 3-2
LIST OF SENSITIVE SPECIES FOUND IN THE CHAPARRAL AND COASTAL SAGE SCRUB COMMUNITIES ON THE SANTA ROSA PLATEAU ECOLOGICAL RESERVE

Species/Common Name	Status[1/]			Habitat Preference	Habitat Present on Site	Seasonal Use	Occurrence on Site (Source)
	Federal	State	CNPS				
BIRDS							
Aimophilia ruficeps Southern California rufus-crowned sparrow	C2	None	---	Coastal sage scrub	Yes	Year-round resident	Yes (SRPER)
Amphispiza belli Bell's sage sparrow	C2	None	---	Chaparral, coastal sage scrub	Yes	Year-round resident	Yes (SRPER)
Aquila chrysaetos golden eagle	None	CSC	---	Chaparral, grasslands	Yes	Year-round resident	Yes (SRPER)
Asio otus long-eared owl	C2	CSC	---	Oak thickets, woodland	Yes	Year-round resident	Yes (SRPER)
Camplorhynchus brunneicapillus sandiegoense coastal cactus wren	C2	CSC	---	Desert wash thorny, shrubs, desert succulent shrub	Yes	Year-round resident	Yes (SRPER)
Lanius ludovicianus loggerhead shrike	C2	None	---	Chaparral, coastal sage scrub, desert riparian	Yes	Year-round resident	Yes (SRPER)
Oreotyx pictus mountain quail	C2	None	---	Decidous forest, chaparral, woodland	Yes	Year-round resident	Yes (SRPER)
Polioptila californica California gnatcatcher	PE	CSC	---	Coastal sage scrub, desert wash	Yes	Year-round resident	Yes (SRPER)
MAMMALS							
Chaetodipus californicus femoralisi Dulzura California pocket mouse	C2	None	---	Coastal sage scrub, chaparral	Yes	Year-round resident	Yes (SRPER)
Chaetodipus fallax fallax northwestern San Diego pocket mouse	C2	None	---	Coastal sage scrub, chaparral	Yes	Year-round resident	Yes (SRPER)

TABLE 3.3-2
LIST OF SENSITIVE SPECIES FOUND IN THE CHAPARRAL AND COASTAL SAGE SCRUB COMMUNITIES ON THE SANTA ROSA PLATEAU ECOLOGICAL RESERVE

Species/Common Name	Status[1/]			Habitat Preference	Habitat Present on Site	Seasonal Use	Occurrence on Site (Source)
	Federal	State	CNPS				
Lepus californicus bennettii San Diego black-tailed jackrabbit	C2	None	---	Coastal sage scrub, chaparral	Yes	Year-round resident	Yes (SRPER)
Neotoma lepida San Diego desert woodrat	C2	None	---	Coastal sage scrub, chaparral	Yes	Year-round resident	Yes (SRPER)

1/ Status = Status of species relative to the Federal and State Endangered Species Acts and California Fish and Game Code.
Fed = Federal status.
T = Federally listed as threatened.
C2 = Category 2 comprises taxa for which information now in possession of the USFWS indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat are not currently available to support proposed rules. Further biological research and field study may be needed to ascertain the status of taxa in this category, and it is likely that many will be found not to warrant listing.
CA = California status.
CSC = California Department of Fish and Game "Species of Special Concern."
--- = No California or Federal status.
CNPS = California Native Plant Society listing (does not apply to wildlife species).
2 = Plants rare, threatened, or endangered in California, but more common elsewhere.
4 = Plants of limited distribution - a watch list. Plants in this category are of limited distribution in California and their vulnerability or susceptibility to threat appears low at this time. However, they are uncommon enough that their status should be monitored regularly.
SRPER = Santa Rosa Plateau Ecological Reserve.

The discussion of special-status species in this section is limited to those species for which suitable habitat is likely to occur within the City limits or sphere of influence, and for which there are recorded occurrences within close proximity to the City. Many species that are regionally known only from localities or habitats (e.g., serpentine soils) that are not pertinent to the Murrieta planning area are not discussed here.

Wildlife

Los Angeles Pocket Mouse

The Los Angeles pocket mouse (*Perognathus longimembris brevinasus*) is designated as a species of special concern. It is associated with arid and seasonally arid climate zones. It subsists chiefly on seeds, insects, and some grasses. Los Angeles pocket mice may not dig underground tunnels, but hide under weeds and dead leaves instead. The geographic range of the Los Angeles pocket mouse is restricted to lower elevation grasslands and coastal sage scrub associations in the Los Angeles basin from approximately Burbank and San Fernando on the northwest to San Bernardino on the northeast, and Cabazon, Hemet, and Aguanga on the east and southeast.

Stephens' Kangaroo Rat

Stephens' kangaroo rat (*Dipodomys stephensi*) is a seed-eating rodent found in western Riverside County, extreme southwestern San Bernardino County, and part of San Diego County. It is a California and federal endangered species. Its preferred habitat is open grassland although it occurs also in open coastal sage scrub and sandy washes. O'Farrell (no date) found that the Stephens' kangaroo rat may be found in habitats with up to 30 percent aerial shrub cover, but most individuals are found in habitat lacking shrub cover. The Pacific kangaroo rat (*Dipodomys agilis*) closely resembles the Stephens' kangaroo rat and is generally found in habitat with greater cover than Stephens' kangaroo rat, although these two species can co-occur in mosaic grassland/scrub areas and edges between these habitats. For this reason, it can be difficult to ascribe kangaroo rat sign (burrows, dusting areas, and scat) to one or the other species.

The USFWS listed the Stephens' kangaroo rat as endangered in 1988. The Endangered Species Act (ESA) prohibits any action that could take, harm, harass, or further endanger the species, including the loss of its habitat. The incidental take provision of the ESA allows the loss of individuals of an endangered species and its habitat, provided that a Habitat Conservation Plan (HCP) is prepared. The HCP identifies preserve areas where land could be purchased to mitigate for the loss of habitat elsewhere within the species range and establishes a user fee to finance the HCP program. The Murrieta General Plan is within the Stephens' kangaroo rat HCP fee area. For the Stephens' kangaroo rat, the current fee is $1000.00 for large lot residences and $1950.00 per acre for other developments. These development fees are used to purchase land within designated HCP. None of the Stephens' kangaroo rat study areas and Known Occupied Habitat are found within the Murrieta General Plan area, although the Santa Rosa and Lake Skinner study areas are located immediately west and northeast, respectively, of the General Plan area.

Mountain Lion

The mountain lion (*Felis concolor*) is a protected species in California. This large carnivore inhabits chaparral and woodland habitats, using densely vegetated riparian corridors for cover, resting, and seasonal or daily movements. Tracks have been reported from Murrieta Creek in the northwest corner of the City, and the species is likely to occasionally use other areas within the City, especially where habitat connections persist to large expanses of natural shrublands or woodlands.[4]

American Badger

The American badger (*Taxidea taxus*) is a California species of special concern. It is an uncommon, permanent resident found throughout most of the state, except in the northern coast area. The badger is most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are carnivorous and eat rats, mice, chipmunks, and especially ground squirrels and pocket gophers. Occasionally badgers have been known to feed on reptiles, insects, birds, eggs, and carrion. Diets shift seasonally and yearly in response to availability of prey. Suitable habitat exists on the project site as Chaparral, and badgers are somewhat tolerant of human activities. However, predator control using indiscriminate trapping and persistent poisons have caused extensive losses making the badger unlikely to occur in the area.

California Gnatcatcher

The California gnatcatcher (*Polioptilia californica*) is a California species of special concern. The California gnatcatcher is a year-round resident that is most numerous in low, dense coastal sage scrub habitat in arid washes, on mesas, and on slopes of coastal hills. Although its primary habitat is in Diegan coastal sage scrub, it is also found in the Riversidian form of this community, and even in chaparral, presumably anywhere that the shrub cover is not excessively dense. An occurrence of the gnatcatcher is recorded near Warm Springs Creek, east of the Hogbacks. A small area of suitable coastal sage scrub habitat occurs near Chaney Hill. However, because this area is isolated from other suitable habitat by extensive urban areas, it is questionable whether the gnatcatcher is still present there.

Cooper's Hawk

The Cooper's hawk (*Accipiter cooperii*) is a California species of special concern. Cooper's hawks nest and forage in riparian and oak woodland areas, usually occurring near open water. The Cooper's hawk feeds primarily on small birds, occasionally taking small mammals. The project site does have sufficient foraging habitat available for Cooper's hawks, and potential nesting areas occur within several of the riparian corridors. The species has been observed within the City boundaries.

Golden Eagle

The Golden Eagle (*Aquila chrysaetos*) is a fully protected species in California. The golden eagle is a resident and migrant throughout California. Its preferred habitat is rolling hills and mountain terrain, wide arid plateaus, deeply cut streams and canyons, and open mountain slopes. Preferred nesting areas are on cliffs and rock outcrops, but large trees are sometimes used. Golden eagles feed mainly on mammals,

birds, reptiles, and carrion. Golden eagles are occasionally observed soaring over the City and can be expected to forage over much of the undeveloped lands. Suitable nesting habitat is probably scarce or non-existent within the City, but may occur in the vicinity of the Hogsbacks, or conceivably in large trees in the eastern portion of the planning area (within the sphere of influence).

Northern Harrier

The northern harrier (*Circus cyaneus*) is a California species of special concern and a fully protected raptor. The northern harrier occurs from lowland annual grasslands up to alpine meadows. Harriers frequent meadows, grasslands, open ranges, desert sinks, fresh and salt water emergent wetlands but are seldom found in wooded areas. The northern harrier is a widespread winter resident and migrant in suitable habitat. The primary prey species for the northern harrier are small mammals, birds, frogs and small reptiles. The northern harrier is a ground nesting raptor that nests in wetland and upland areas. This species has been seen within the City boundaries and it is to be expected that northern harriers would most likely winter on the project site.

Least Bell's Vireo

The least Bell's vireo is found in dense, young willow-cottonwood woodlands. It is known from limited populations along dense riparian habitats in southern California. This subspecies has suffered a decline in numbers due to the state wide reduction in riparian habitat, its preferred habitat. Nest parasitism by brown-headed cowbirds (*Molothrus alter*) has further reduced the population of the least Bell's vireo. In 1988, the population was estimated at approximately 400 breeding pairs in the United States.[5]

Orange-throated Whiptail

Orange-throated whiptail (*Cnemidophorus hyperythrus*) is a Category 2 Candidate for federal listing. The orange-throated whiptail is an uncommon to fairly common lizard over most of its range. This species inhabits low-elevation coastal shrub, chamise-redshank chaparral, mixed chaparral, and valley-foothill hardwood habitats. The orange-throated whiptail forages actively on the surface and scratches through surface debris for arthropods, preferring termites when available.

San Diego Horned Lizard

The San Diego horned lizard (*Phrynosoma coronatum blainvillii*) is a California species of special concern. Horned lizards are found in a wide variety of habitats, including chaparral and sage scrub and riparian edges. They are typically absent from open or barren fields or grasslands. Other characteristics of suitable habitat for this species include the presence of rodent burrows for refuge from predators and the absence of disturbed compressed soils. Horned lizards feed on ants and other insects.

Southwestern Pond Turtle

The southwestern pond turtle (*Clemmys marmorata pallida*) is a Category 1 Candidate for federal listing and a California species of special concern. Southwestern pond turtles are uncommon in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest. The species is normally associated with

permanent ponds, lakes, streams, irrigation ditches, or permanent pools along intermittent streams. This species is considered omnivorous. Aquatic plant material, insects, fish, frogs and even carrion have been reported as elements of its diet. Little suitable habitat for the southwestern pond turtle occurs within the City, but the species has been recorded from Murrieta Creek (undisclosed site; possibly within City boundaries) and could occur in Warm Springs Creek or in or near the springs near its headwaters.

Plants

For the purposes of this document, it is preferable to discuss special-status plant species that potentially occur in the City in groups according to habitat.

Plants of Vernal Pools and Clay Soils

Occurrences of special-status vernal pool plants have been recorded from the Santa Rosa Plateau, from Skunk Hollow and other areas just east of the City, and from Murrieta Hot Springs (occurrence now extirpated). It is possible that as-yet unmapped vernal pools, or soils that could support some of these species, occur in the eastern portion of the planning area. Species of concern that occur in this habitat include several state-listed endangered species (San Diego button celery (*Eryngium aristulatum* var. *parishii*), Parish's meadowfoam (*Limnanthes gracilis* ssp. *parishii*) California Orcutt grass (*Orcuttia californica*), and three-leaved brodiaea (*Brodiaea filifolia*). Prostrate navarretia (*Navarretia fossalis*) is a federal Category 2 Candidate species occurring in vernal pools in the region.

Additional special-status plant species occur in non-wetland, or marginal wetland habitats on clay soils in the Murrieta region. These include Munz's onion (*Allium fimbriatum* var. *munzii;* state-listed threatened), San Diego ambrosia (*Ambrosia pumila;* federal Category 2 Candidate), Palmer's grappling-hook (*Harpagonella palmeri*; CNPS list 2).

Plants of Chaparral, Scrub, and Woodland Habitats

Payson's jewelflower (*Caulanthus simulans*) is a federal Category 2 Candidate species of rocky slopes that are generally vegetated by chaparral or sage scrub. It is most commonly observed under atypical climatic conditions, such as following fires or unusual precipitation patterns.

Parry's spineflower (*Chorizanthe parryi* var. *parryi*) is also a federal Category 2 Candidate species found in open areas within a variety of scrub and chaparral community types. Although its center of distribution lies somewhat to the east of Murrieta, it nevertheless could occur in any areas of those habitat types within the City.

Fish's milkwort (*Polygala cornuta* var. *fishiae*) is found in chaparral canyons, oak woodlands, and riparian habitats; as is the case with most members of its family, it requires moist or very shady habitat. It has been found in Cole Canyon, just west of the City.

Plants of Riparian or Other Wetland Habitats

Slender-horned spineflower (*Dodecahema leptoceras*) is a state- and federally listed endangered species found within the alluvial washes or sandy alluvial terraces within Riversidian Fan Sage Scrub. Alluvial wash habitat does occur along Murrieta Creek north of the levees, so it is possible, albeit unlikely, that this species could occur there.

Regulations Relevant to Biological Resources

Federal Wetland Regulations

Section 404 of the Clean Water Act (1972) prohibits the filling of jurisdictional waters of the U.S. without a permit issued by the U.S. Army Corps of Engineers (Corps) under a Memorandum of Understanding with the Environmental Protection Agency. Most waters of the U.S. are defined by list (lakes, ponds, rivers, etc.) and the limits of jurisdiction determined at the ordinary high water level. The limits of jurisdiction in wetlands (which are one of the types of waters of the U.S.) are presently determined by the Corps 1987 methodology.[6]

Fills may be permitted by the issuance of an individual permit. Alternatively, fills of less than 10 acres above the headwaters of a water of the U.S. or in an adjacent or isolated wetland, and in certain other circumstances, may be authorized under the auspices of one of approximately 30 nationwide permits, following notification of and approval by the Corps.[7]

A feasible plan for the mitigation of wetland fills and other impacts, and consultation with state and other federal agencies are required for impacts to waters of the U.S. Fills of less than one acre are permitted without notification. The EPA Section 404(b)(1) guidelines for the evaluation of mitigation and compensation proposals include the stipulation that avoidance of fills is the most preferred mitigation, followed by on-site compensation, then off-site compensation. Compensation ratios required for unavoidable fills are typically higher than 1:1, especially if the wetland habitat to be affected is a particularly scarce or unique type, such as riparian habitat or vernal pools.

Streambed Alteration Agreements

Sections 1601 through 1603 of the California Fish and Game Code prohibit alterations of any streams or other bodies of water, including intermittent and seasonal channels and many artificial channels, without a permit from CDFG. The limit of CDFG jurisdiction is, subject to the judgment of the CDFG, up to the 100-year flood level. Thus, CDFG jurisdiction extends beyond that of the Corps and is applied to alterations not requiring fills. The Fish and Game Code of California, Section 1603, states that "It is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake designated by the department, or use any material from the streambeds with out notifying the department of such activity....". Mitigation is in the form of revegetation and restoration to original contours is typically required by CDFG for alterations resulting in impacts upon wetland or aquatic habitats as a condition of the Streambed Alteration Permit.

Endangered Species Acts

The State of California and the U.S. Government have enacted laws protecting endangered species and their habitats. Legal protection under these acts is extended to species listed as threatened or endangered, but not to candidate species. The federal act stipulates rigorous requirements for consultation and/or the preparation of a Habitat Conservation Plan whenever a proposed project or action may affect listed species or their habitat. The California act mandates that state lead agencies may not take actions resulting in jeopardy to listed species or their habitat.

Urbanized Areas

Although urbanized areas have habitat values that are severely altered from their original condition, they still provide habitat for some native resident and migratory wildlife species. The primary habitat value of urbanized areas is provided by the abundance of landscaped trees and shrubs that are universally planted in developed areas. Several species of birds native to California forage extensively in urban and suburban areas. Wherever native trees, such as oaks, sycamore, and walnut, are used in street median plantings, they offer foraging, roosting, and even nesting habitat for native birds and other wildlife. Urban areas occur throughout the central and southeast portion of the General Plan area and are located approximately in areas near the freeways. The General plan area is significantly divided by two major interstate freeways passing through the plan area in a north to south direction.

Non-Native Grassland

Almost all of the grasslands presently occurring within the City are dominated by non-native species. California buckwheat (*Eriogonum fasciculatum*) is an important native component of these grassland areas. It may occur as scattered individuals, or form a dominant low-shrub layer. Probably, many of these areas once supported sage scrub and/or chaparral and are now undergoing vegetation succession from use as pastures and croplands back to some form of scrubland.

Nearly all of the areas that might once have supported native grassland composed of perennial bunch grass (i.e. *Stipa* spp.), are now dominated by mostly non-native annual species. However, some small areas of native grassland may occur as remergent of historic flora and develop on heavier, more clayey soils, or as small patches of grassland within other habitat types, such as oak woodlands or chaparral.

Grasslands offer excellent habitat for several types of native wildlife, including snakes, rodents (such as Stephens' kangaroo rat, discussed in detail below), song birds, and birds-of-prey. Raptors that use grasslands within the City would likely include a variety of hawks and owls. Non-Native Grasslands occur through the site in non-urbanized areas mostly in the northern and eastern portions of the General Plan area.

Agricultural Lands

A substantial portion of the City has been used, or continues to be used, for agricultural purposes such as grazing or dry-farming of feed grains and hay. Despite the disturbance of vegetation and land that is inherent in agricultural activities, these areas continue to provide habitat values similar to grasslands for wildlife.

Wildlife species such as small birds and rodents can find abundant food and cover in the on-site Agricultural habitat; this in turn provides a prey base for wide ranging and migratory predators such as birds-of-prey, coyotes, and foxes.

LAND USE

SECTION 3.4

3.4 LAND USE

INTRODUCTION

This section of the MEA describes the existing land uses and approved specific plans in the MEA study area. The existing land use information was based on the 1992 inventory conducted by the City, which examined assessor records, aerophotographs and field checks. The data collected from the inventory was transferred to a computerized based map using a CAD system.

EXISTING LAND USE

The city of Murrieta encompasses 26.5 square miles and the sphere of influence includes an additional 18.2 square miles for a total study area of 44.7 square miles or 28,646 acres. According to the recent land use inventory, residential use accounts for 7,604 acres or 26.2 percent of the total study area. Almost two-thirds of the existing residential use is rural residential (lots larger than half an acre in size). The existing land use is presented in Table 3.4-1, with definitions of land use categories in Table 3.4-2. Commercial, industrial and public/institutional uses, which are employment generating uses, represents only 3.2 percent of the total land use. The largest segment of Murrieta's existing land use is undeveloped, which comprises vacant and agriculture/farms/mining land. Undeveloped land represents 16,598 acres or 57.9 percent of the total study area. Vacant and agricultural uses are mapped in Figure 3.4-1.

The land use data has been separated by geographic areas: the area west of Interstate 15 (I-15); the area between I-15 and State Highway 215 (Hwy 215); the area east of Hwy-215; the sphere of influence and the MEA study area geographic boundaries are mapped in Figure 3.4-2.

Incorporated Area West of Interstate 15

The Incorporated Area west of I-15 is approximately 7,994 acres in size. This area is bordered by the La Crescenta Hills and Santa Rosa Plateau foothills to the west, the Temecula city limits to the south, I-15 to the east and the unincorporated community of Wildomar to the north. This area is characterized by low hills to the north, foothills to the west and flat plains along Murrieta Creek.

According to the 1990 Census, the incorporated Area west of I-15 had a population of 3,230 residents and a housing stock of 1,205 units for an average of 2.68 persons per dwelling unit.

This area is characterized as having the oldest settlement patterns in the city and the majority of the historic structures. There is also a great diversity of single-family homes that range from rural mobile

City of Murrieta - General Plan Land Use Inventory

Existing Land Uses	City Area West of I-15 (in acres)	City Area I-15 to I-215 (in acres)	City Area East of I-215 (in acres)	Sphere Area (in acres)	Plan Area Total (in acres)	Percent of Total Plan Area
Rural Residential	1825.3	508.0	885.6	1694.7	**4913.6**	17.2%
Single Family Residential	479.7	1288.2	442.1	293.7	**2503.7**	8.7%
Multi-Family Residential	0.0	116.3	12.9	57.1	**186.3**	0.7%
Commercial	216.8	162.9	85.0	10.5	**475.2**	1.7%
Industrial	70.6	0.0	0.0	0.0	**70.6**	0.3%
Public/Institutional	181.3	90.9	30.1	45.1	**347.4**	1.2%
Parks/Recreation/ Open Space	624.8	454.2	85.4	253.3	**1417.7**	4.9%
Agriculture/Farm/ Mining	552.4	75.4	6.5	1599.9	**2234.2**	7.8%
Vacant Lands	3708.5	1763.3	1801.0	7090.7	**14,363.5**	50.1%
Streets/Freeway & R.O.W.	334.9	761.2	425.2	612.0	**2133.3**	7.4%
Totals	**7994.3**	**5220.4**	**3773.8**	**11,657.0**	**28,645.5**	**100.0%**

Source: The Lightfoot Planning Group

Existing Land Use Inventory Area Calculations

TABLE 3.4-1

The land use categories used for the Land Use Inventory Map are described as follows:

RESIDENTIAL

Rural-Residential - This category is used to identify all lots 1/2 acre in size or larger, with a single-family dwelling(s) as the primary use.

Single-Family Residential - This category identifies lots less than 1/2 acre in size with a single-family dwelling(s) as the primary use.

Multi-Family Residential - All attached housing, regardless of lot size, is found in this category.

COMMERCIAL

All commercial uses, retail, medical, regional, office etc. are found in this category.

INDUSTRIAL

All industrial uses, manufacturing, research and development, assembly etc. are found in this category.

CIVIC/INSTITUTIONAL

This category includes government and agency buildings, installations and service facilities; schools and schoolyards both public and private; churches; airports; reservoirs and cemeteries. For example, water district well sites, phone company substations, the new high school and the Bear Creek Airport would all be in this category.

PARKS, RECREATION & OPEN SPACE

All public parks, golf courses, and specific plan or other plan designated open space are in this category. This includes lands set aside as slope areas and channelized or naturalized drainage courses.

AGRICULTURE, FARM & MINING

Horse farms, llama ranches and agricultural operations that were the primary use on the property and appeared commercial viable, were included here. Large lots with a residence, a few horses or limited crop area which appeared to be for personal or hobby use, were not included.

VACANT LANDS

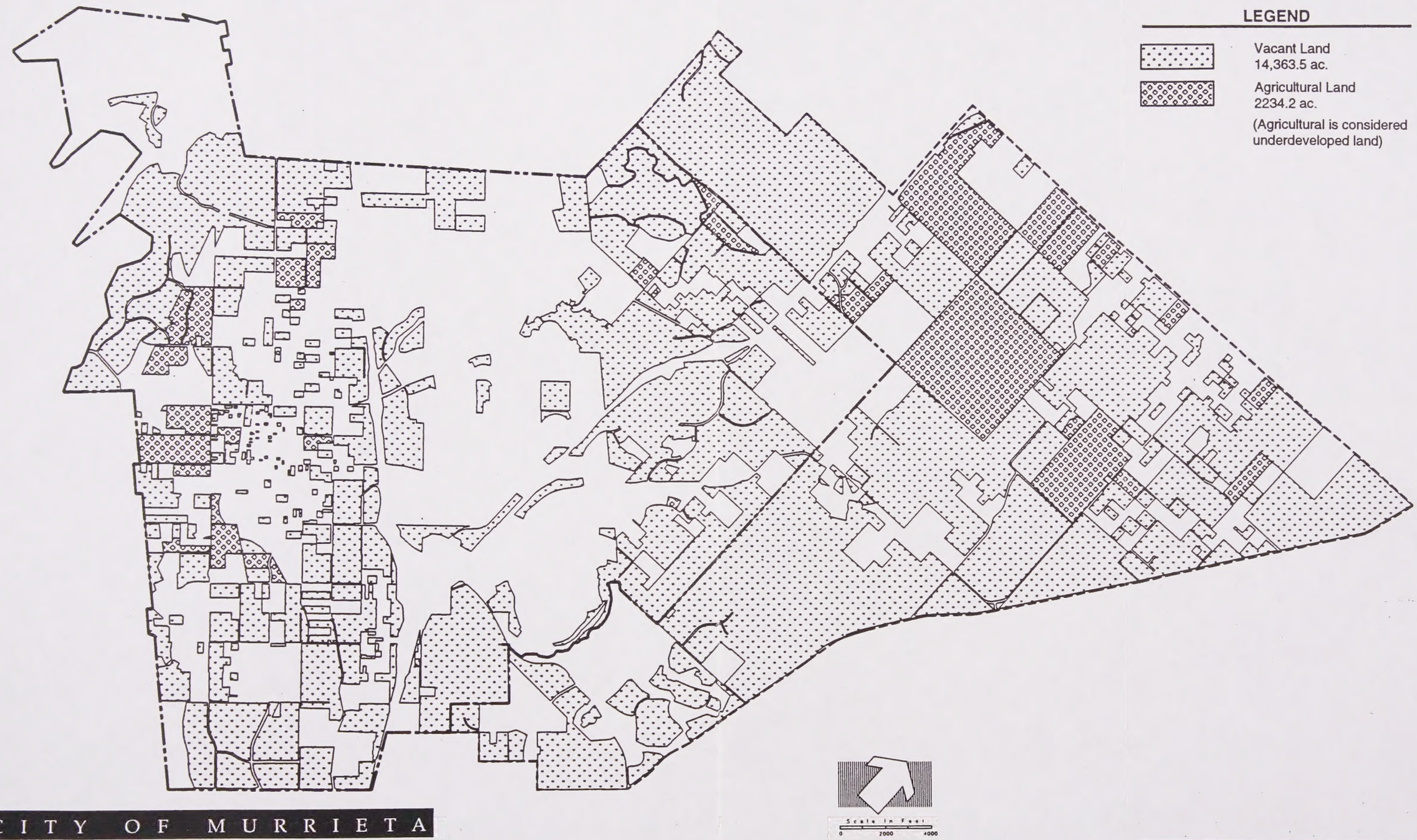
Unimproved, unoccupied lands were placed in this category.

STREETS

Streets and their respective rights of way are found in this category.

Existing Land Use Inventory Category Criteria

TABLE 3.4-2



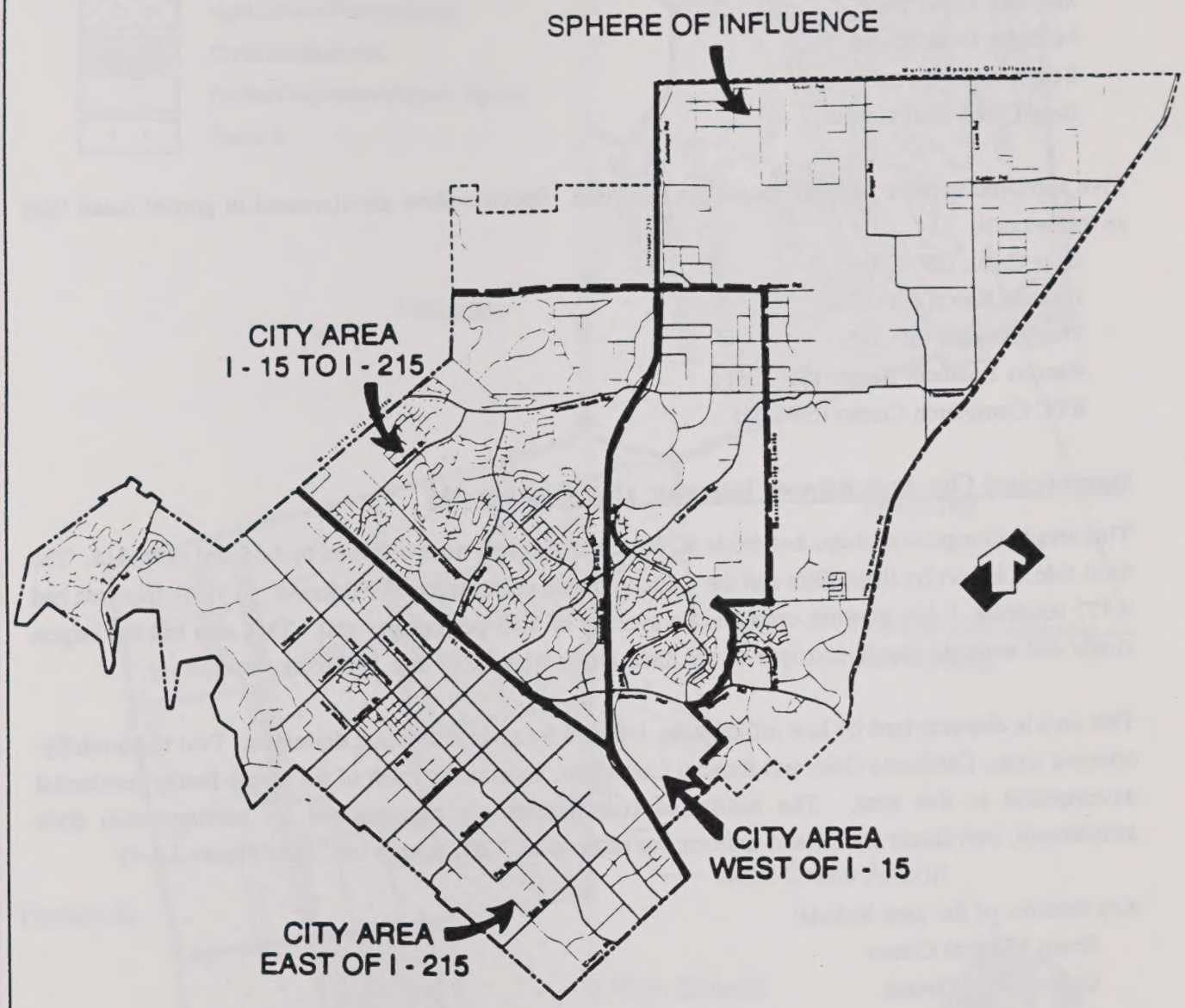
CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Source: 1992 General Plan Land Use Survey

Vacant and Underdeveloped Land

FIGURE 3.4-1



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

City Areas and Sphere of Influence

FIGURE 3.4-2

homes to luxury estates in the private Bear Creek golf course community of the Santa Rosa Plateau foothills. The city's primary commercial and industrial land uses are also located in this area. The existing land uses are presented in Table 3.4-1 and Figure 3.4-3.

Key features of this area include:

- Old Town Murrieta
- Murrieta Creek
- Murrieta Town Hall
- Murrieta High School
- Bear Creek Airport
- Bear Creek Golf Course

Five approved specific plan are located in this Area. Specific plans are discussed in greater detail later in this section.

- Bear Creek (SP 128)
- Joaquin Ranch (SP 128)
- The Vineyard (SP 215)
- Rancon Business Center (SP 235)
- RTC Commerce Center (SP 203)

Incorporated City Area Between Interstate 15 & Highway 215

This area is triangular in shape and totals 5,220 acres, with two sides bordered by I-15 and Hwy-215. The third side is border by Rose Hills and the unincorporated community of Wildomar. In 1990, this area had 9,477 residents, 5,189 housing units and an average of 1.83 persons per unit. This area has the largest single and multiple family acreages of the three areas, with 1,288 and 116 acres respectively.

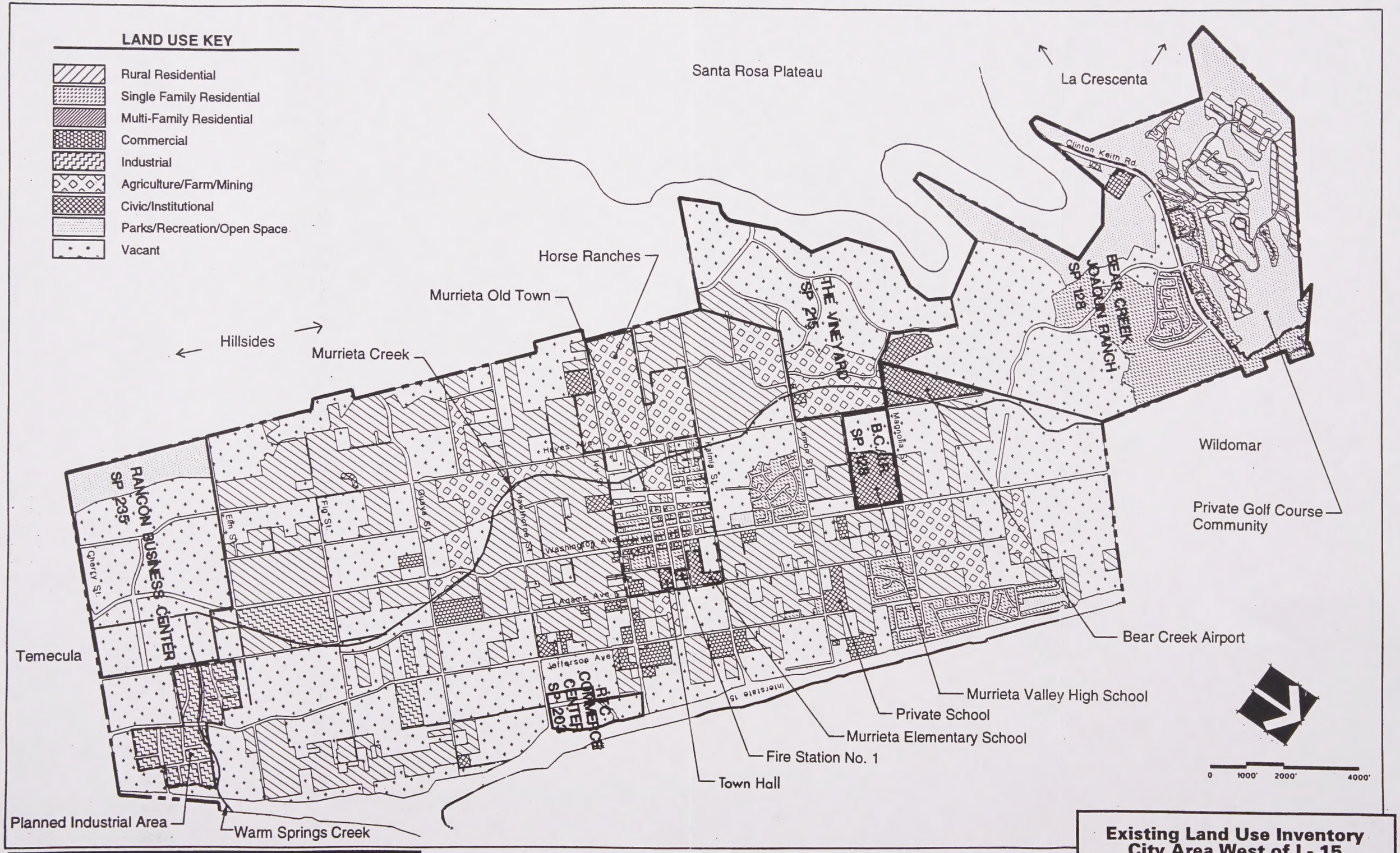
This area is characterized by low rolling hills, bisected by several seasonal drainages. Two residentially-oriented areas, California Oaks and Rancho Las Brisas, account for most of the single-family residential development in this area. The residential communities are characterized by mediterranean style architecture, curvilinear streets and uniform lot patterns of 7,200 square feet. (See Figure 3.4-4)

Key features of the area include:

- Sharp Medical Center
- Colony Golf Course
- California Oaks Sports Park
- Los Alamos Airpark

Three approved specific plans in this area include:

- California Oaks (SP 173)
- Rancho Las Brisas (SP 156)
- Murrieta Springs Mall (SP 275)

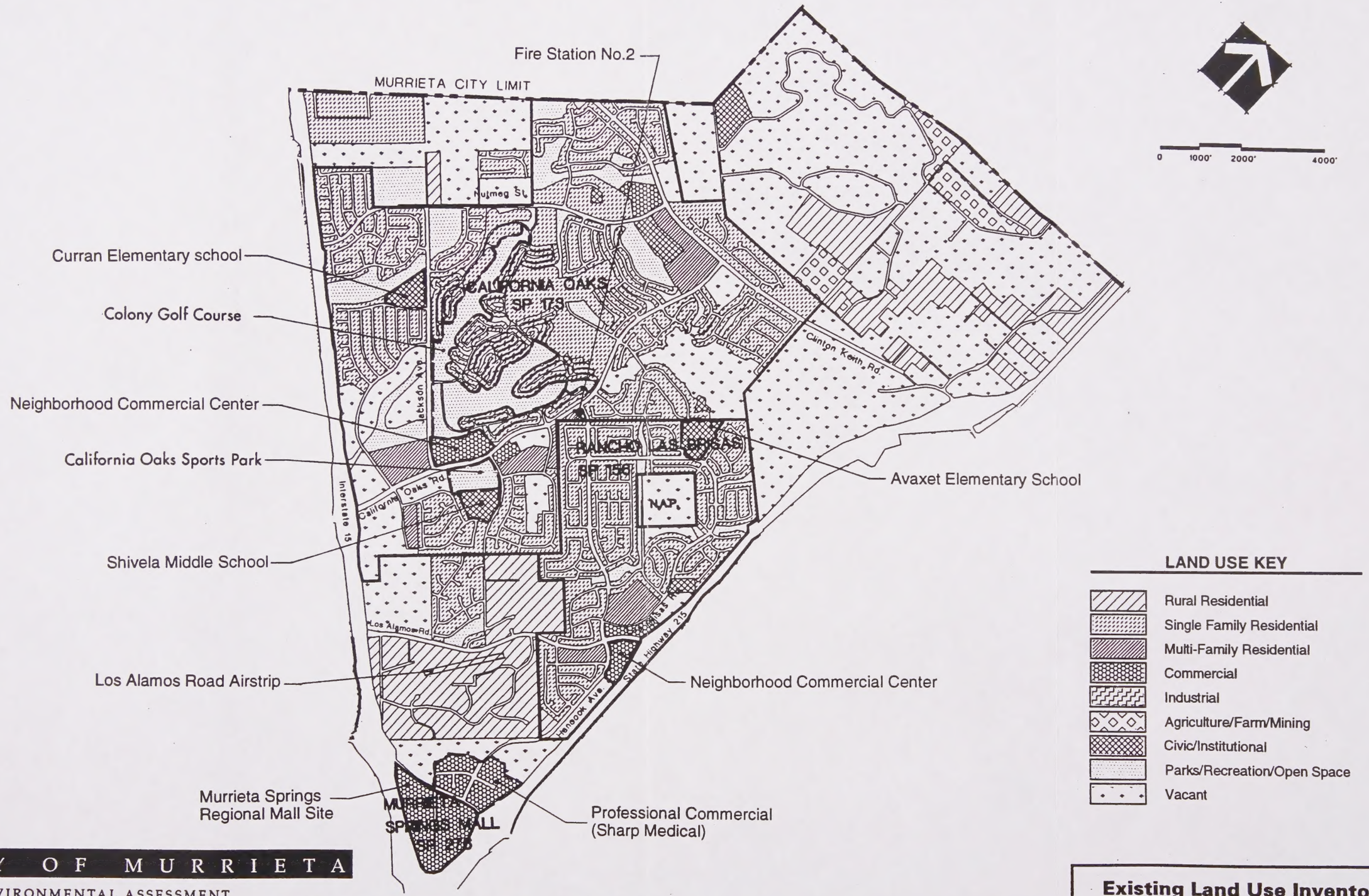


Existing Land Use Inventory
City Area West of I - 15

FIGURE 3.4-3

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing Land Use Inventory
City Area I - 15 to I - 215

FIGURE 3.4-4

Incorporated Area East of Highway 215

The area located east of Hwy-215 is approximately 3,774 acres in size. In addition to the Hwy-215 to the west, the city's sphere of influence borders the east and north, Murrieta Hot Springs (also in Murrieta's sphere of influence) and the city of Temecula to the south. This area is characterized by flat plains and rolling hills. According to the 1990 Census, this incorporated area had 6,350 residents, 2,522 dwelling units and an average of 2.52 persons per dwelling unit. (see Figure 3.4-5)

Key features of this area include:

- Warm Springs Creek
- Hogbacks
- Murrieta Hot Springs Road Community Commercial Center
- Proposed Los Alamos Road Historic District

There are two approved specific plans in this area:

- Rancho Acacia (SP 156)
- Alta Murrieta (SP 103)

Murrieta Sphere of Influence

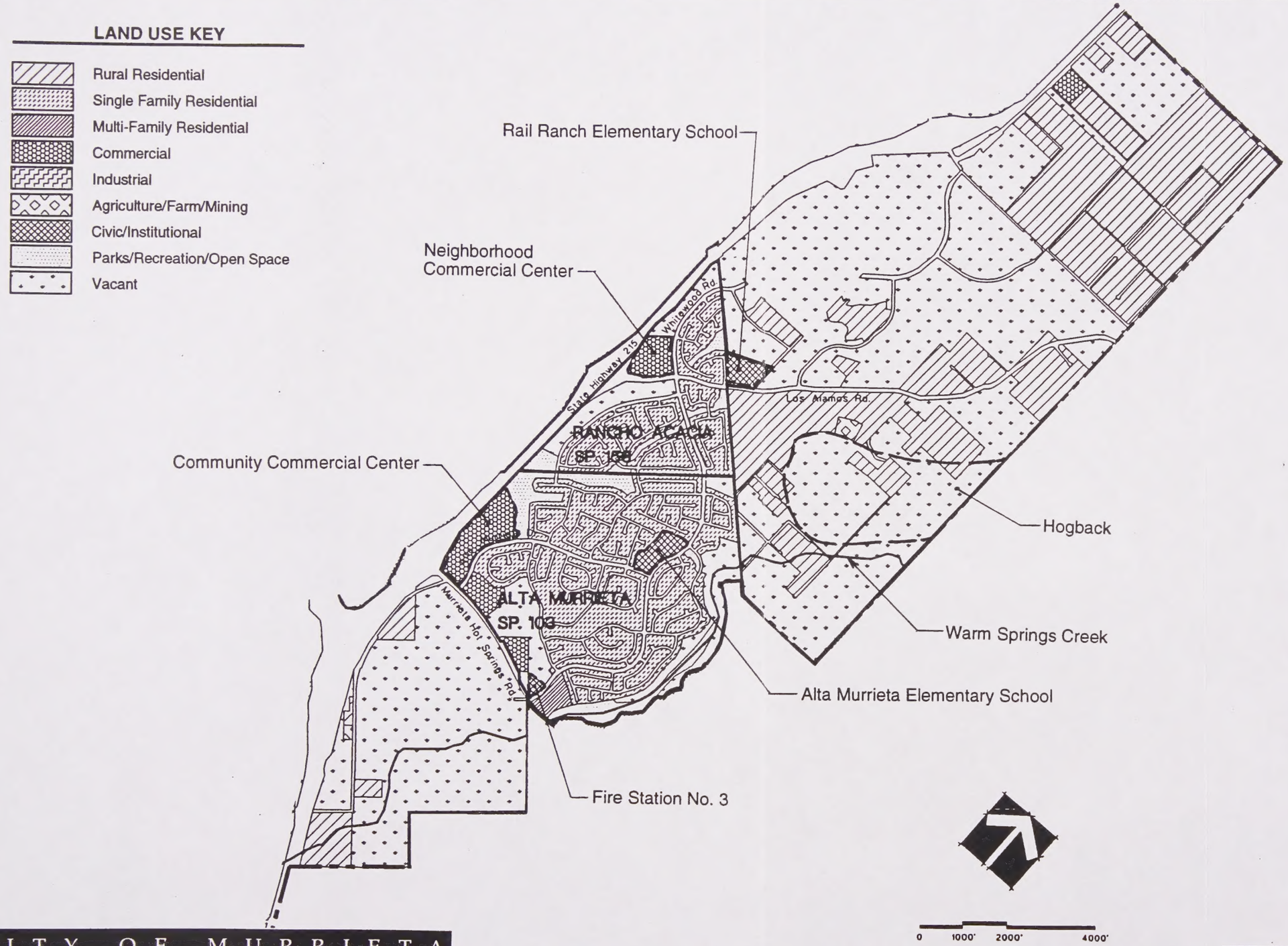
The Murrieta sphere of influence includes 11,657 acres of land, with a 1990 population of 4,663 persons and a housing stock of 2,177 dwelling units. The average persons per dwelling unit of the sphere of influence was 2.14 -- the same as the city of Murrieta.

The sphere of influence is bordered by the city of Murrieta to the west, the city of Temecula and state Highway 79 (also the northerly limit of Temecula's sphere) to the south and east, Scott Road and the unincorporated community of Menifee Valley to the north. This area is currently under the jurisdiction of Riverside County. In 1992, the Local Agency Formation Commission (LAFCO) approved Murrieta's request that these lands be designated as its sphere of influence for planning purposes.

The area is characterized by rolling hills and flat plains which are bisected by seasonal drainages. Predominant land forms include the oblong hills known as the Hogbacks, Warm Springs Creek, Rose Hills and Briggs Hills. Vacant land represents the largest segment of the sphere's land use. (See Figure 3.4-6 and Figure 3.4-7).

Key features of the sphere include:

- Murrieta Hot Springs
- Rancho California Golf Course
- Hogbacks
- Warm Springs Creek

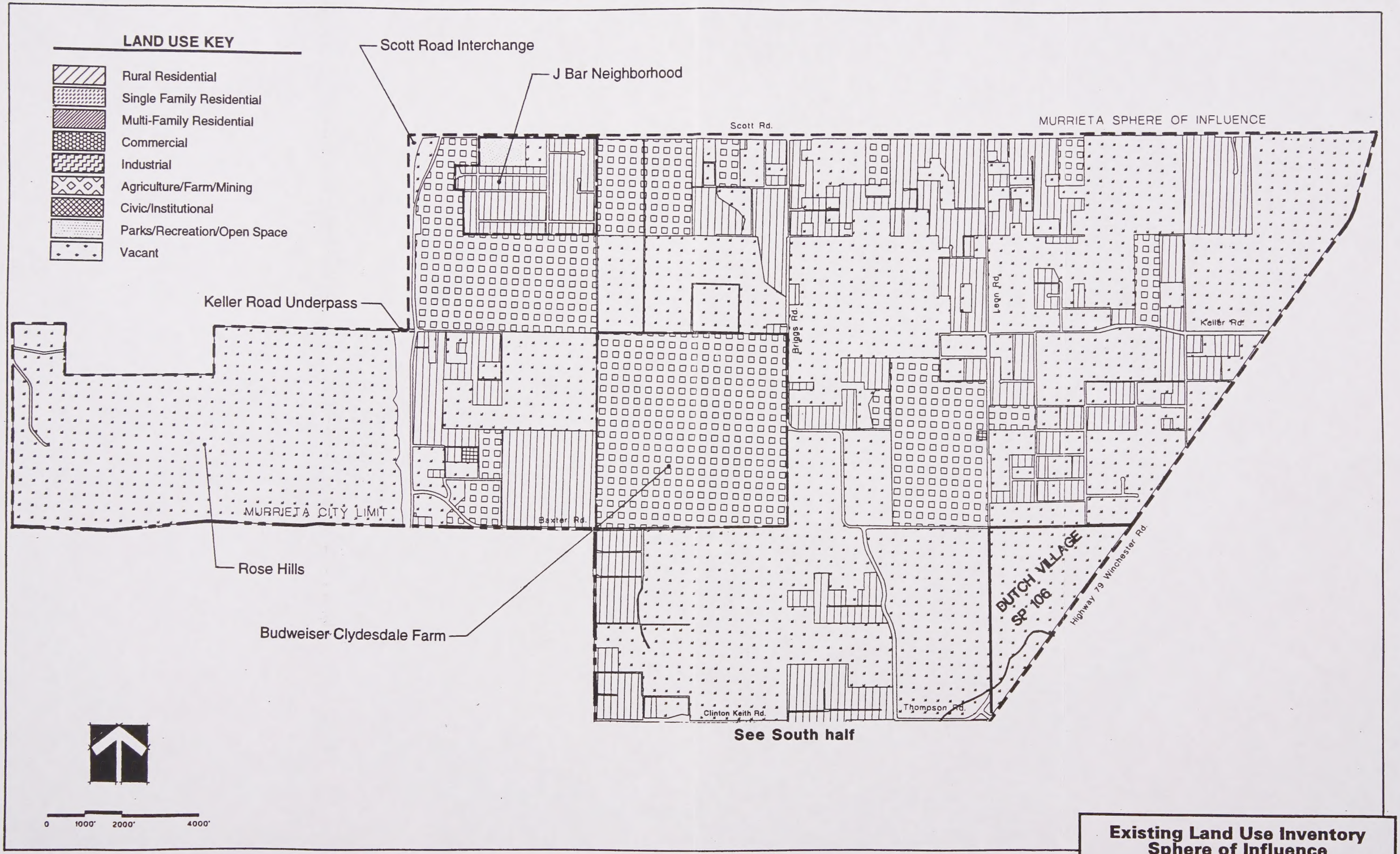


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing Land Use Inventory
City Area East of I-215

FIGURE 3.4-5

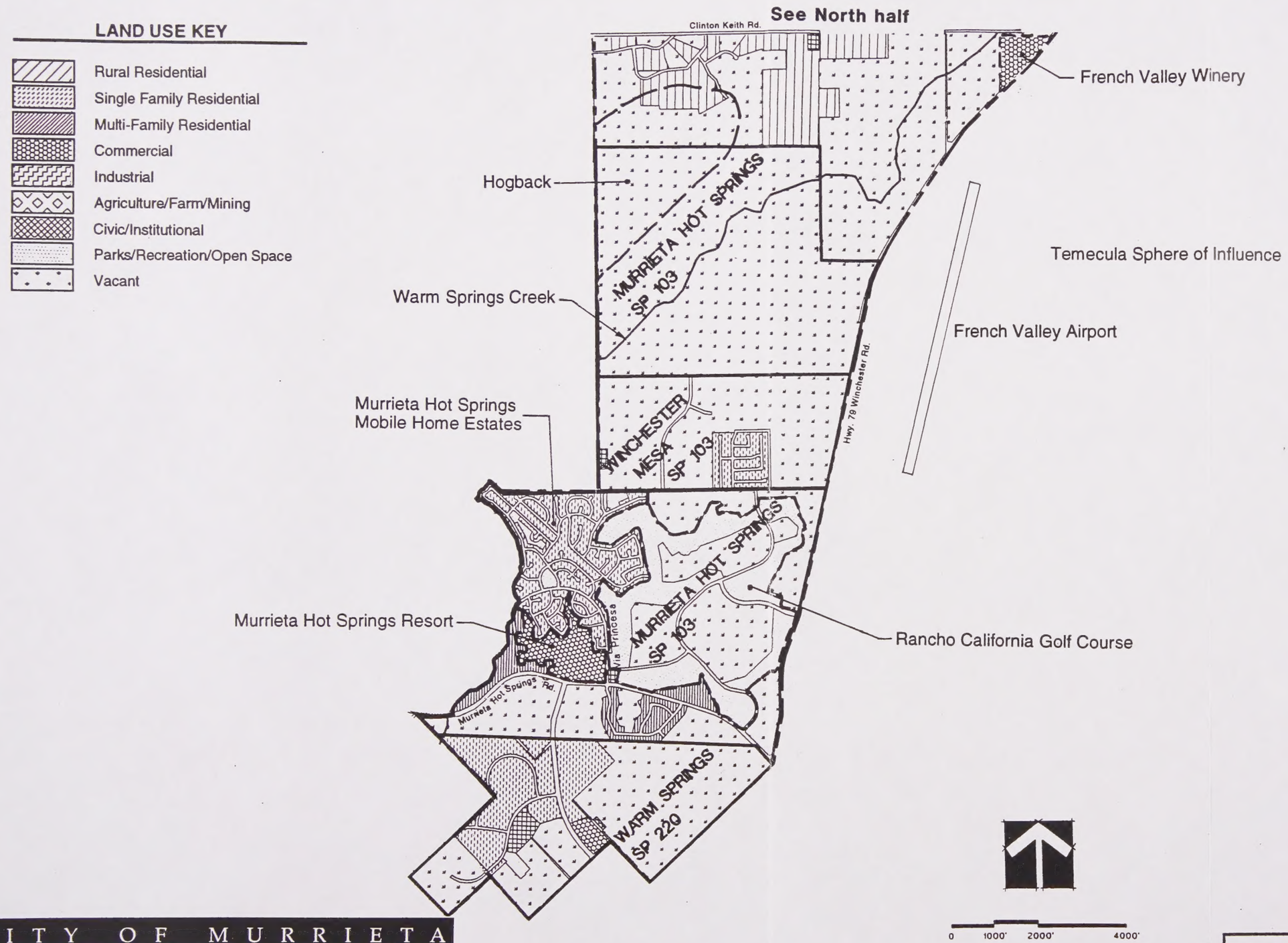


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing Land Use Inventory
Sphere of Influence
(North half)

FIGURE 3.4-6



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing Land Use Inventory
Sphere of Influence
(South half)

FIGURE 3.4-7

There are four approved Specific Plans in this area:

Murrieta Hot Springs (SP 103)
Warm Springs (SP 220)
Winchester Mesa (SP 103)
Dutch Village (SP 106)

APPROVED SPECIFIC PLANS

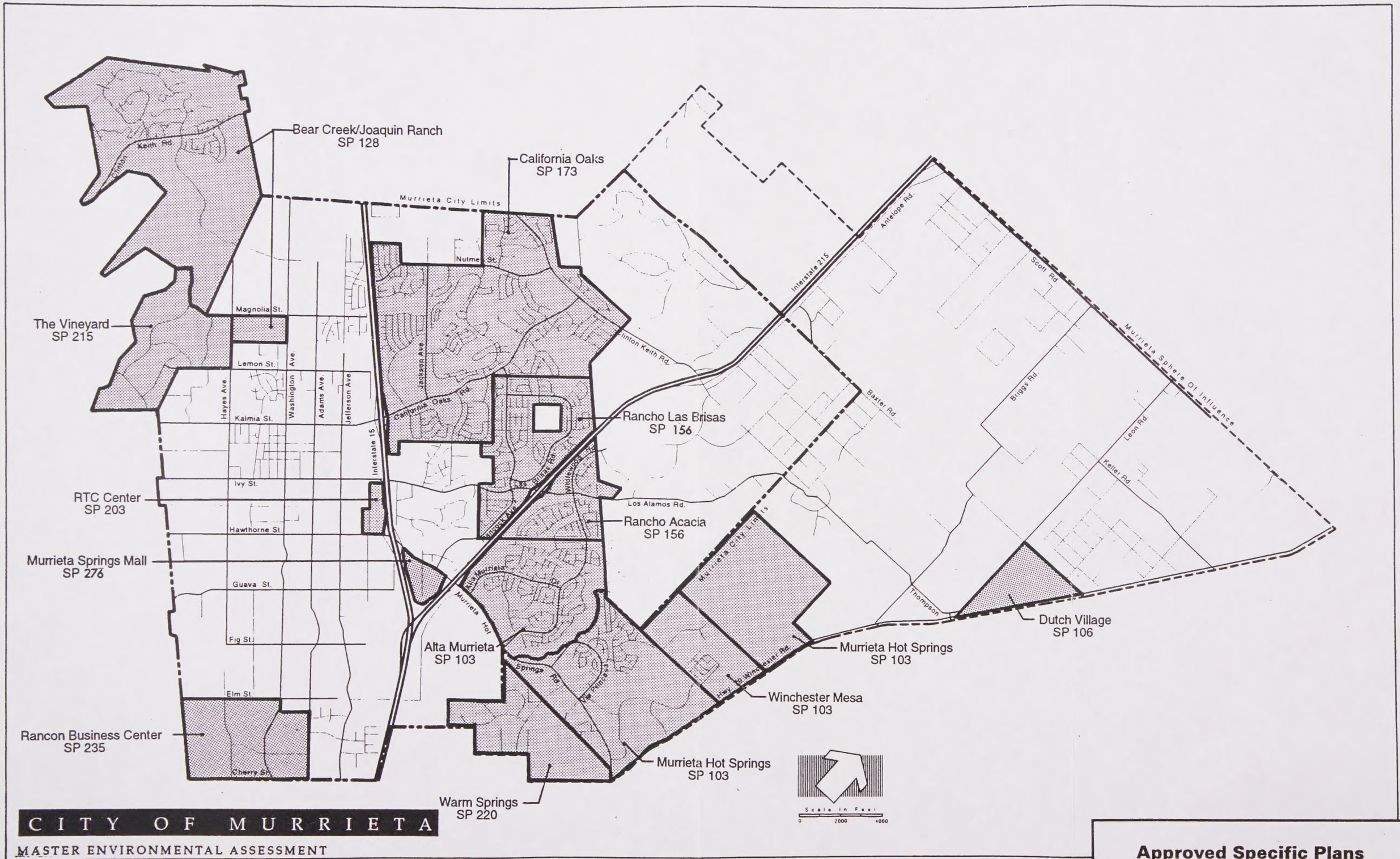
The Murrieta General Plan Area includes eleven currently approved specific plans within the city and sphere of influence. Several specific plan areas (i.e. Bear Creek & Joaquin Ranch) share specific plan numbers and have joint or overlapping approvals. Figure 3.4-8 shows the locations for each Specific Plan.

These plans account for more than 9,953 acres in the Murrieta General Plan Area and have already had a significant impact on land use patterns. Each specific plan area, is identified by name, number, location within the study area, relation to major roadways and geographic boundaries, size in acres, mix of land uses including residential, commercial, industrial, civic/institutional, open space, and vacant land, and features or characteristics. Also included is an assessment of current development status. They are listed in order, by specific plan number.

- **Alta Murrieta, Murrieta Hot Springs, and Winchester Mesa (SP 103)**

  Together, Alta Murrieta, Murrieta Hot Springs and Winchester Mesa total 3,055 acres. All three specific plan areas were originally part of the Murrieta Hot Springs Specific Plan and share the same specific plan number. Alta Murrieta and Winchester Mesa were approved subsequent to the original specific plan. Alta Murrieta is located in the city of Murrieta east of Hwy-215, bordered by Murrieta Hot Springs Road to the South and the city boundary to the east. Murrieta Hot Springs is split in two by Winchester Mesa specific Plan area. It is located west of Winchester Road in the sphere of influence, east of Alta Murrieta, North of Warm Springs, and south of Hunter Road. Winchester Mesa is located between the northern and southern portions of Murrieta Hot Springs.

  Residential uses include single- and multi-family residences in the Murrieta Hot Springs and Alta Murrieta Specific Plans. Commercial uses exist east of Hwy-215 along Murrieta Hot Springs Road and in the Murrieta Hot Springs Resort area. There are no industrial uses within this specific plan area. Prominent civic/institutional uses include city wells and the Alta Murrieta School. There are also six existing and one proposed, park sites, as well as the Rancho California Municipal Golf Course. Approximately 60 percent of the specific plan area is currently vacant land, primarily within the Winchester Mesa and the northern Hot Springs Specific Plan areas. The remaining 40 percent is developed, primarily with residential uses, the Rancho California Municipal Golf Course and the Murrieta Hot Springs Resort.



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Approved Specific Plans

FIGURE 3.4-8

- **Dutch Village (SP 106)**

Dutch Village is located in both the Murrieta and Temecula sphere of influence. The Murrieta portion is triangular in shape, with Winchester Road and Leon Road making up the east and west boundaries. The northern boundary is approximately a quarter mile south of Kjersti Road, and to the north by Keller Road. Approximately 20 percent of the total 1,108 acre specific plan is within the Murrieta sphere of influence, with the remaining 80 percent in the Temecula Sphere. This specific plan area is bisected by Warm Springs Creek and is adjacent to French Valley Airport. Approximately 60 percent of the land in the Murrieta portion of this specific plan is vacant, with approximately 30 percent rural residential and 10 percent agricultural.

- **Bear Creek (SP 128)**

Bear Creek Specific Plan area covers 2,134 acres and is located in the northwest corner of the city of Murrieta, north of Clinton Keith Road and west of Wildomar. This specific plan area has developed as a low density, single family custom home and private golf course community. Murrieta Valley High School is located between Hayes and Washington Avenues. A junior high school site is proposed on the vacant land directly to the west of the high school. There are presently no commercial or industrial uses in the Bear Creek Specific Plan area.

- **Rancho Acacias, Rancho Las Brisas (SP 156)**

This specific plan area is 846 acres in size. Rancho Acacias is located west of Hwy-215, south of California Oaks Road. Rancho Las Brisas is triangular in shape, situated across Hwy-215 from Rancho Acacias and north of Alta Murrieta.

In both Rancho Acacias and Rancho Las Brisas, approximately 80 percent of each specific plan is allocated to single-family residential homes. Another 10 percent of Rancho Las Brisas is allocated for multi-family units. Commercial uses are found in both plan areas, along the Highway 215 corridor. No Industrial uses are planned for in this specific plan area. There are also civic/institutional uses, including the Avaxat School in Rancho Las Brisas and the Rail Ranch School in Rancho Acacias. Five park sites are designated in these Specific Plan areas.

Much of the development planned for Rancho Acacias and Rancho Las Brisas has already occurred, and approximately 10 remain undeveloped.

- **California Oaks (SP 173)**

This Specific Plan area is the largest in the study area, covering 1,976 acres. It is located within the city of Murrieta, between I-15 and Hwy-215 and north of Rancho Las Brisas. The Hogbacks extend into the eastern portion of this Specific Plan area. This specific plan area is predominantly developed. Residential uses make up the majority of this area including both single and multi-family units. Commercial uses can also be found along California Oaks Road and at the intersection of Clinton Keith Road and Nutmeg Street. No Industrial uses are designated in this Specific Plan area.

E. Hale Curran School, Shivela Middle School, and the proposed Tovashal School are the Civic/Institutional uses found in this Specific Plan area. Six parks sites, including the sports park, are distributed throughout this Specific Plan.

- **RTC Commerce Park (SP 203)**

This small specific plan area (approximately 51 acres) is situated west of I-15, between Ivy and Hawthorn Streets. Commercial and multiple-family residential are the primary land uses of this specific plan area. Currently, plans are underway to construct a Home Depot and Family Fun Center in this area.

- **The Vineyard (SP 215)**

The Vineyard Specific Plan area is 521 acres in size and is located west of Hayes Avenue and directly south of Joaquin Ranch.

About 75 percent of this specific plan area is currently vacant land. The remainder is made up by the Sykes Ranch, vineyards and a well north of Lemon Street. This specific plan area is characterized by rolling foothills at the base of the Santa Rosa Plateau. Murrieta Creek passes through the easterly portion of this specific plan.

- **Warm Springs (SP 220)**

Most of the 475 acres of this specific plan is currently undeveloped. The development that does exist is all single family homes. It is situated in the Murrieta sphere of influence, south of Murrieta Hot Springs Road and the Murrieta Hot Springs Specific Plan.

Single-family residential is the predominant land use in this specific plan with commercial uses are east of Margarita Road. One existing and one proposed park site can be found in this specific plan area.

- **Rancon Business Center (SP 235)**

The Rancon Business Center, which is 511 acres, is located in the southwest corner of the city, west of Adams Avenue. This specific plan area is currently undeveloped. The specific plan designates planned industrial use with open space at the westerly edge of the area. The designated open space is located on slope areas at the base of the hills west of Murrieta. This specific plan area presently has infrastructure and is planned for future industrial use.

- **Joaquin Ranch (SP 253)**

This 657-acre specific plan area is situated in the northwest area of the City of Murrieta. Most of this specific plan is currently undeveloped land. Existing development is limited to a single tract of

single-family residences built south of Clinton Keith Road, across from the Bear Creek Specific Plan. A mix of residential, commercial, civic/institutional and open space have been approved.

- **Murrieta Springs Mall (SP 276)**

This specific plan area is located between the I-15 and Hwy-215 and south of Murrieta Hot Springs Road. It is approximately 64 acres in size. This area is undeveloped with the exception of one small pre-existing mobile home park, which will eventually be removed with the construction of the recently approved Murrieta Springs Regional Mall.

A three-phase project, the mall is proposed to have 1.7 million square feet of commercial space, including eight anchor stores, smaller stores, a food court, and a cinema.

POPULATION AND HOUSING

SECTION 35

3.5 POPULATION AND HOUSING

INTRODUCTION

This section of the MEA presents a profile of the existing population and housing stock in the city of Murrieta the sphere of influence and the MEA study area. The population discussion will include recent growth trends, demographics, income and labor force. Housing characteristics will include household size, composition of the housing stock, tenure, vacancy, cost and affordability, and jobs/housing balance.

Due to the recent incorporation of the city of Murrieta, complete 1990 Census data corresponding to the city's boundaries was not available at the time this report was prepared. As a result, information regarding population and housing characteristic has come from a number of sources,l including the 1990 Census, the 1991 Murrieta Community Profile Report, and the 1980-1990 Murrieta Valley Unified School District Census Report. Short of basing the entire section on 1990 Census data, these various sources have been used to generally characterize existing population and housing conditions within the MEA study area until complete census data is available.

POPULATION

GROWTH TRENDS

The 1990 Census recorded 19,076 residents within the incorporated boundaries of the city of Murrieta. The Murrieta sphere of influence had a population of 4,663 bringing the total 1990 study area population to 23,739 persons. Estimates established by the Murrieta city staff indicate that the population of Murrieta in 1970 was approximately 542 persons and 2,255 in 1980. This would indicate a 316 percent population increase from 1970 to 1980, and a 746 percent increase from 1980 to 1990. Recent 1992 population estimates prepared by City staff identified a 1992 population of 29,300, indicating a 46 percent population growth rate over a two year period. From 1980 to 1990 Murrieta grew at a faster rate than the city of Temecula and Riverside County. This is illustrated below in Table 3.5-1.

TABLE 3.5-1
REGIONAL POPULATION GROWTH COMPARISONS

Area	1980	1990	Growth	Percent Growth
City of Murrieta	2,255	19,076	16,821	746
City of Temecula	7,787	27,099	19,312	248
Riverside County	663,923	1,170,413	506,490	76

Source:1990 Census; 1991 Murrieta Community Profile; Temecula Draft Housing Element

POPULATION CHARACTERISTICS

Age

According to the 1991 Murrieta Community Profile prepared by the city, the median age in Murrieta is an estimated 31.9 years. Based on the 1990 Census for the Murrieta Valley Unified School District, 10.5 percent of the population is 65 years of age or older; 31.5 percent is in the middle age category, 35 to 64 years of age; 28.2 percent is in the young adult category, age 18 to 34; and 29.8 percent is under the age of 18. This information is graphically presented in Figure 3.5-1. Figure 3.5-2 further breaks down the 1990 population, by age and gender for the Murrieta Valley Unified School District.

Ethnicity

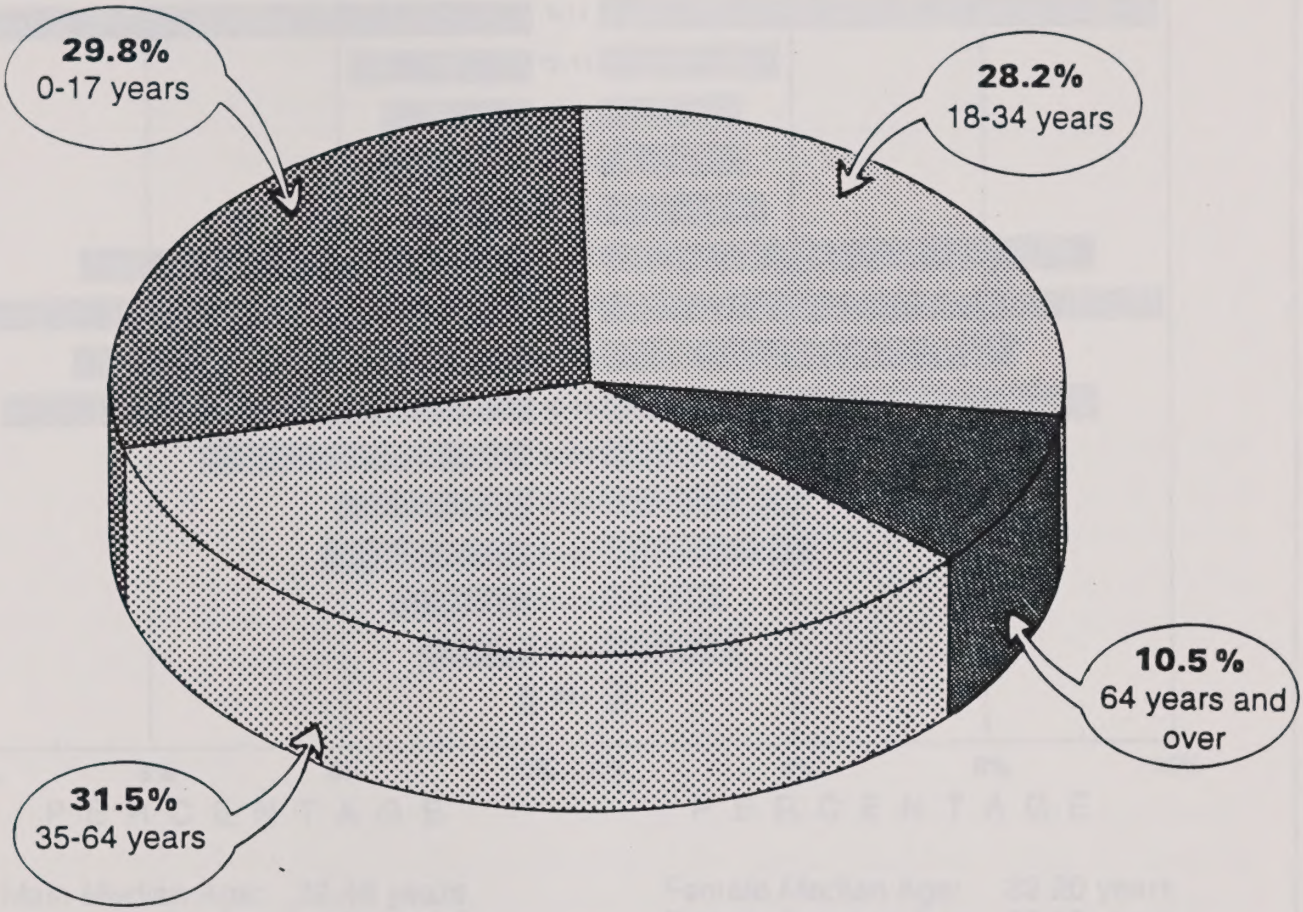
Based on the 1990 Census, the MEA study area is predominately White, comprising an estimated 81.7 percent of the population. The second largest ethnic group is the Hispanic population, at 13.7 percent. Asians comprised 3.1 percent of the Murrieta population. Blacks, 1.0 percent; Indians, 0.5 percent; and others, less than 0.1 percent. Table 3.5-2 identifies these ethnic populations by city, sphere of influence, and plan area.

TABLE 3.5-2
POPULATION BY ETHNICITY BY PLAN AREA

	City Area Total		Sphere		Plan Area Total	
Group	Pop.	%	Pop.	%	Pop.	%
White	15,377	80.7	3,992	85.6	19,369	81.7
Hispanic	2,704	14.2	541	11.6	3,245	13.7
Black	194	1.0	38	0.8	32	1.0
Indian	83	0.4	36	0.8	119	0.5
Asian	686	3.6	53	1.1	739	3.1
Other	11	0.1	5	0.1	16	0.1
Total	19,055	100	4,665	100	23,720	100

Labor Force

The Murrieta Valley Unified School District Census Report indicated in 1980 that 27.7 percent of the labor force residing in the school district was employed in the technical, sales, and administrative support occupations. Managerial and professional occupations comprised 22.6 percent of the labor force population. Table 3.5-3 presents the 1980 occupational characteristics of residents in the District.



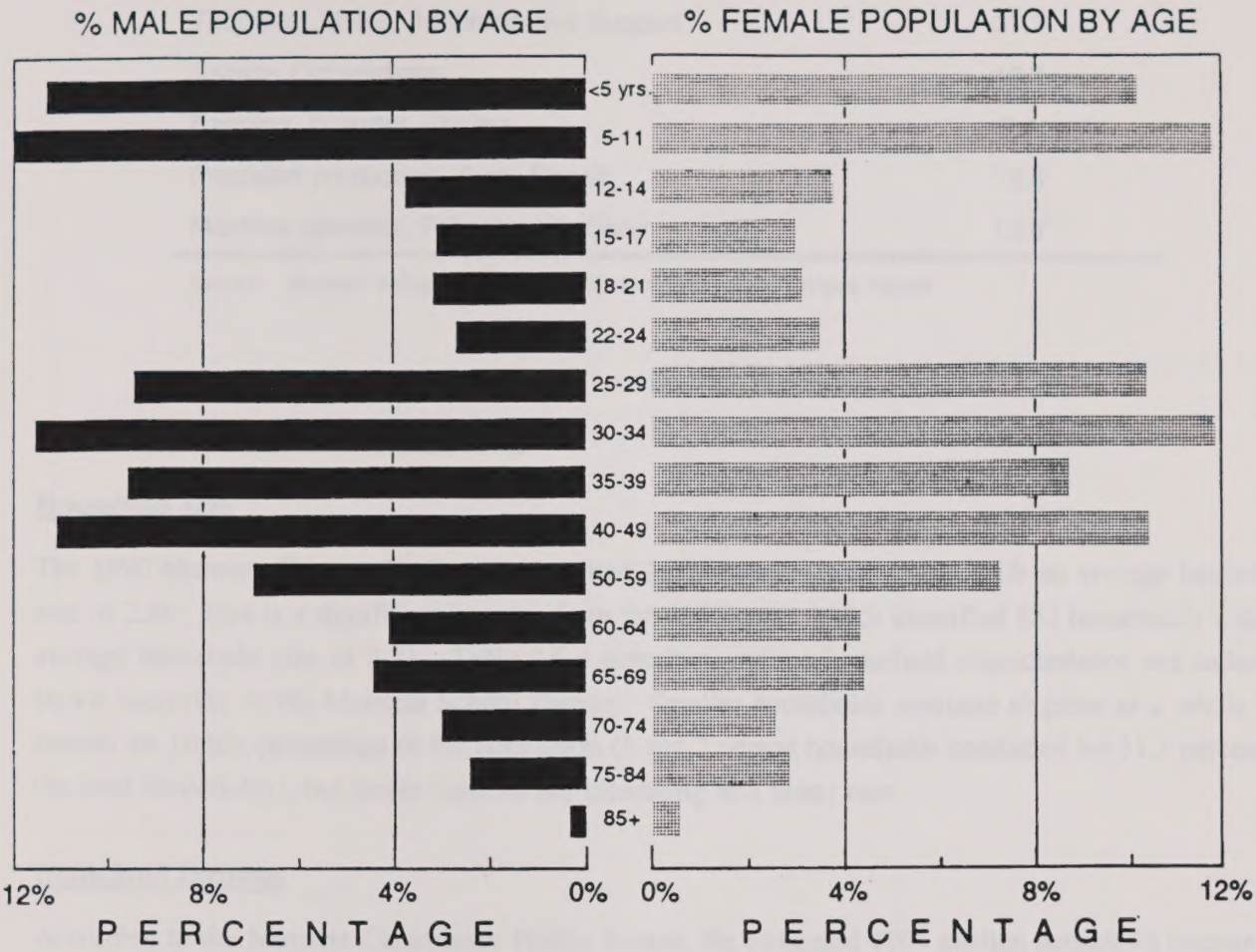
CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Murrieta Age Groups as Percentage of Population

Source: 1990 U.S. Census,
Murrieta Valley Unified School District Census Report

FIGURE 3.5-1



Male Median Age: 32.48 years
Male Average Age: 32.75 years
Male Population: 9,633

Female Median Age: 32.20 years
Female Average Age: 33.13 years
Female Population: 9,424

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Source: 1990 U.S. Census,
1991 Murrieta Valley School District Census Report

Murrieta 1990 Population By Age and Gender

FIGURE 3.5-2

TABLE 3.5-3
OCCUPATIONAL CHARACTERISTICS OF MURRIETA 1980

Occupation	Percent
Managerial & Professional	22.6
Technical, Sales, Administrative Support	27.7
Service Occupations	12.3
Farming, Forestry, Fishing	8.4
Precision production, Craft, Repair	16.3
Machine operator, Fabricator, Laborer	12.8

Source: Murrieta Valley Unified School District 1980 - 1990 Census Report

HOUSEHOLD CHARACTERISTICS

Household Size

The 1990 Murrieta Community Profile identified 7,003 households in 1990, with an average household size of 2.86. This is a significant increase from the 1980 count which identified 833 households with an average household size of 2.71. Table 3.5-4 describes various household characteristics and indicates trends occurring in the Murrieta School District. Smaller households continue to grow as a whole and remain the largest percentage of the population (1 and 2 person households combined for 51.1 percent of the total households), but larger families are increasing at a faster rate.

Household Incomes

According to the Murrieta Community Profile Report, the estimated 1991 median household income for Murrieta was $33,949. The 1990 Census identified a 1989 median household income for Riverside County of $33,081. Table 3.5-5, presents the estimated 1991 income distribution for the city of Murrieta.

Household Characteristics 1980 - 1990

Persons Per Occupied Housing Unit	1980		1990	
	Number of Households	Percentage	Number of Households	Percentage
1 Person	133	16.0%	905	12.9%
2 Persons	355	42.6%	2,678	38.2%
3 Persons	129	15.5%	1,230	17.6%
4 Persons	128	15.3%	1,262	18.0%
5 Persons	53	6.4%	599	8.5%
6 Persons	35	4.2%	215	3.0%
7 Persons or more	—	—	114	1.6%
Total Number of Households	833	100.0%	7,003	100.0%
Average Household Size	2.71		2.89	

CITY OF MURRIETA

GENERAL PLAN
ENVIRONMENTAL IMPACT REPORT

Source: Murrieta Valley School District Census Report
1991 Murrieta Community Profile

Household Characteristics 1980 - 1990

TABLE 3.5-4

TABLE 3.5-5
1991 INCOME DISTRIBUTION OF MURRIETA, 1991

Income Ranges	Percent
0 To $14,999	15.8
$15,000 To $24,999	20.1
$25,000 To $34,999	15.7
$35,000 To $49,999	17.2
$50,000 To $74,999	18.0
$75,000 or More	13.2
Median	$33,949

Source: 1991 Murrieta Community Profile

HOUSING

GROWTH TRENDS

The 1990 Census identified 11,093 housing units in the MEA study area. The Murrieta Valley Unified School District Census Report states that in 1980, an estimated 2,434 housing units were within the school district. Although these areas have different boundaries, this comparison illustrates the significance residential development that has occurred over the ten year period. This growth in the housing stock has occurred through previous approval of large residential specific plans.

HOUSING CHARACTERISTICS

Type of Housing Stock

Table 3.5-6 presents the type of housing unit that existed in 1980 and 1990. In 1990, single-family detached units represented 67.8 percent of Murrieta's total housing stock. Mobile homes represented the second largest residential housing type, accounting for 16.3 percent.

TABLE 3.5-6
HOUSING UNIT TYPE OF STUDY AREA 1980 & 1990

Type Of Unit	1980		1990	
	No. of Units	Percent	No. of Units	Percent
1 Unit Detached	1,453	59.7%	7,522	67.8
1 Unit Attached	NA	NA	219	2.0
2 units	117	4.8%	18	0.2
3 to 9 units	NA	NA	514	4.6
10 or more units	165	4.3%	974	8.8
Mobile homes, Trailers, etc.	759	31.2%	1,813	16.3
Other	NA	NA	34	0.3
Total	2,434	100.0	11,093	100.0

Source: Murrieta Valley Unified School District 1980 - 1990 Census Report

Age of Housing Stock

Homes in Murrieta are relatively new. As shown in Table 3.5-7, 79.5 percent of Murrieta's housing stock was constructed between 1980 and 1990. In the last two years (1990 - 1992), 794 additional units were added to Murrieta's housing stock.

TABLE 3.5-7
AGE OF MURRIETA'S HOUSING STACK

Year Built	Percent
April 1980-1990	79.5
1979-March 1980	3.1
1975-1978	8.2
1970-1974	5.0
1960-1969	1.7
1950-1959	0.8
1940-1949	0.5
1939 or Earlier	1.1
Total	100.0

Source: Murrieta Valley Unified School District 1980 - 1990 Census Report

Tenure

The housing tenure in Murrieta is predominately owner occupied. According to the Murrieta Valley Unified School District Census Report, owner occupied units increased as a percentage of total occupied households from 78.7 percent in 1980 to 82.1 percent in 1990. Renter occupied units on the other hand decreased from 21.3 percent in 1980 to 17.9 percent in 1990. This can be attributed to the fact that the Murrieta housing stock is typically single-family detached and mobile homes, which caters to home ownership tenure. As shown previously in Table 3.5-6, 15.9 percent of the units are multi-family housing which typically provides rental housing opportunities.

Vacancy Rate

The Murrieta has maintained a fairly high vacancy rate. The Murrieta Valley Unified School District Census Report identified a 18.4 percent vacancy rate in 1980, which increased to 23.5 percent in 1990. This high vacancy rate in 1990 can be attributed to the large amount of construction that took place in the late 1980's which was followed by reduced home sales. These two factors left a large standing inventory of newly constructed homes. The vacancy status of the units making up the 23.5 percent (2,615 units) is listed below in Table 3.5-8.

TABLE 3.5-8
VACANCY STATUS OF MURRIETA, 1990

Status	Percent
For Rent	35.1
For Sale Only	40.1
Seasonal	8.0
Other	16.8
Total	100.0

Source: Murrieta Valley Unified School District 1980 - 1990 Census Report

Housing Costs

According to local construction industry sources, 1992 new home retail housing costs equate to approximately $100 to $110 a square foot for one story single-family detached homes, $80 to $90 per square foot for two story single-family detached homes, and $75 to $80 per square foot for multi-family housing units. The 1991 Murrieta Community Profile identified a median sales price of $150,600. Due to current economic trends and the possible downsizing of units to meet consumer needs, it is estimated that the median home sales price in 1992 has dropped to $140,000.

According to local realtors, typical rental prices in Murrieta can range from $400 to $1100 dependant upon unit type, size and location. A survey conducted in September 1992, estimating monthly rental and mortgage costs is illustrated below in Table 3.5-9.

TABLE 3.5-9
MONTHLY HOUSING COSTS OF MURRIETA - 1992

	1 Bdrm	2 Bdrm	3 Bdrm	4 Bdrm
Rent/Apt	$450	$550	-	-
Rent/House	-	$725	$850	$1000
Median Sales**	-	$128,000	$133,900	$169,449
Monthly mrtg*	-	$751	$786	$1,042

Source: Murrieta realtors and property managers; Sept 1992

*Assumes 30-year fixed 8.0% loan with 20% down payment and does not include property tax, insurance, special assessments, or homeowners association fees.

**Sales prices from Multiple Listing Service (MLS) January 1992-Present, resale homes only, no new home sales included.

Table 3.5-10 shows housing affordability caps based on 1992 income levels, household sizes and unit sizes. In tracking the 1992 housing costs, it appears that the City's current housing stock is not affordable to very low income households as well as low income households consisting of three and seven persons. The entire housing stock is affordable to moderate and upper income households.

JOBS/HOUSING BALANCE

Motor vehicle trips and other transportation modes contribute the most significant air quality impacts in the region. It is widely understood that a reduction of vehicle trips and vehicle miles will have direct benefits to air quality.

The dispersed land use pattern common in Southern California tends to separate employment areas from residential areas, thus encouraging dependency on car travel and an increase in vehicle miles traveled (VMT). One of the objectives of the South Coast Air Quality Management District is to reduce VMT by locating jobs and housing closer together such that work commute trips will be shorter. As the jobs/housing balance improves and the VMT are reduced, congestion will be eased and traffic flow will improve, resulting in improved air quality.

Housing Affordability Caps
1991 State HCD Standards (Including Utilities)

Unit Type	1 Bedroom		2 Bedrooms		3 Bedrooms		4 Bedrooms	
	1 Person	2 Persons	3 Persons	4 Persons	5 Persons	6 Persons	7 Persons	8 Persons
VERY LOW INCOME (<50% of Median)								
Max Annual Income	$12,600	$15,900	$17,850	$19,850	$21,450	$23,050	$24,600	$26,200
Max Monthly Income	$1,050	$1,325	$1,487	$1,654	$1,787	$1,920	$2050	$2,183
Rent (30%)	$315	$397	$446	$496	$536	$576	$615	$655
LOW INCOME (50% to 80% of Median)								
Max Annual Income	$21,500	$25,400	$28,600	$31,750	$34,300	$36,850	$39,400	$41,900
Max Monthly Income	$1,792	$2,117	$2,383	$2,646	$2,858	$3,071	$3,283	$3,492
Rent (30%)	$537	$635	$715	**$794**	**$857**	**$931**	$985	**$1,047**
MODERATE INCOME (80% to 120% of Median)								
Max Annual Income	$30,250	$38,100	$42,900	$47,650	$51,450	$55,250	$59,100	$62,900
Max Monthly Income	$2,521	$3,175	$3,575	$3,971	$4,287	$4,604	$4,925	$5,242
Rent (30%)	$756	$952	**$1,072**	**$1,191**	**$1,286**	**$1,381**	**$1,477**	**$1,572**

Shaded boxes indicate affordable rents for specified income level and household size.
Bold figures indicate affordable mortgage payments for specified income level and household size (Affordable mortgage payments not available for 1 bedroom houses).

MEDIAN INCOME								
Annual Income	$25,200	$31,760	$35,750	$39,700	$42,900	$46,050	$49,250	$52,400
Monthly Income	$2,100	$2,647	$2,979	$3,308	$3,575	$3,837	$4,104	$4,367
Rent (30%)	$630	$794	$893	$992	$1,072	$1,151	$1,231	$1,310

Source: HCD 1992 (Figures based on Riverside County 1992 Median Income of 39,700 for a family of four.)

Housing Affordability Caps

Jobs/housing balance is the concept of regionally matching the location, intensity, and nature of jobs to housing in order to encourage a reduction in automobile trips and total miles traveled with a corresponding increase in the use of mass transit and alternative methods of transportation, such as carpools, bicycles and walking. It is assumed that when the distance between home and the workplace is reduced, there is a greater likelihood to use alternative transportation methods. The premise to the strategy is that when sufficient jobs are available locally to balance the employment demands of the city and region, as well as locating commercial activities near residential centers, the overall automobile trips will be reduced. The result of this is a lessening of congestion and an improvement to air quality; the primary objective of jobs/housing balance.

SCAG's Regional Growth Management Plan (1989) states that a region's jobs and housing are in balance when an area has enough employment opportunities for most of the people who live there and enough housing opportunities for most of the people who work there. It is apparent that the Central Riverside subregion, which Murrieta is in, currently has more housing than jobs. According to SCAG 1987 estimates, the jobs/housing ratio for the Central Riverside Subregion was 0.56. This compares with a regional ration of 1.31.

ECONOMICS

SECTION 3.6

3.6 ECONOMICS

INTRODUCTION

This section presents the existing economic conditions of the city in terms of job opportunities and the four economic sectors that have a direct bearing on the form and distribution of land uses of the city of Murrieta, namely:

- Retail Sector
- Office Sector
- Industrial Sector

ECONOMIC OVERVIEW

Murrieta's economy and the economy of southwestern Riverside County have in large measure been driven by consumers attracted to this area's housing opportunities. This consumer support base has stimulated development of the retail floor space and some degree of office development in response to consumer needs. Southwestern Riverside County is unique in one key regard - it provides a much broader mix of housing, including estates, than is generally found in an emerging commuter community such as Antelope Valley, Moreno Valley, the High Desert, Santa Clarita, etc. The attractiveness of this area to high-income executives has, therefore, stimulated more industrial activity than would ordinarily be expected in a community of this type.

Patterns of long-term economic change throughout Southern California shown in Table 3.6-1 illustrate the influence of surrounding counties on the economic growth of the Inland Empire, including southwest Riverside County and the city of Murrieta. The Inland Empire's share of employment growth in Southern California increased from 8.6 percent during the 1970s to 17.3 percent during the 1980s.

TABLE 3.6-1
EMPLOYMENT GROWTH TRENDS OF SOUTHERN CALIFORNIA

Employment Change	1960 - 1970		1970 - 19801		1980 - 1990	
	Growth	Percent	Growth	Percent	Growth	Percent
Los Angeles County	670,500	55.7	750,500	46.1	630,800	36.6
Orange County	254,800	21.2	415,800	25.5	368,700	21.4
Inland Empire	104,800	8.7	140,200	8.6	299,000	17.3
Ventura County	45,600	3.8	60,000	3.7	83,800	4.9
San Diego County	128,200	10.6	261,900	16.1	342,300	19.8
Total	1,209,900	100.0	1,628,400	100.0	1,724,600	100.0
Average Annual Change	120,390		162,840		172,460	

Source: U.S. Census; State of California; U.S. Department of Commerce.

The ratio of local jobs to occupied units in the Inland Empire was 33.6 percent less than the average for all of Southern California, suggesting that, in 1990, about 34.0 percent of housing was supported by commuters or a high level of retirees. The long-term incremental increase in average household size in the Inland Empire suggest that families have become a larger share of population growth while retirees have become a smaller share as shown below:

TABLE 3.6-2
POPULATION, HOUSING AND EMPLOYMENT GROWTH RATIOS

	1960 - 1970	1970 - 1980	1980 - 1990
Jobs/Pop	0.314	0.338	0.290
Jobs/Occ. Hsg	0.894	0.742	0.950
Pop/Occ. Hsg	2.84	2.20	3.27

As would be expected, the Inland Empire's share of growth in taxable retail sales between 1980 and 1990 (22.5%) exceeded the comparable figures for any other area except Los Angeles County (See Table 3.6-3). While representing 26.4 percent of new industrial development authorized by permit in Southern California from 1980 to 1991, the Inland Empire represented only 5.9 percent of new office space development. (See Table 3.6-4)

TABLE 3.6-3
TAXABLE RETAIL SALES

	Taxable Retail Sales (Percent of Total)		
	1980	1990	Change
Los Angeles-Long Beach	57.2	50.0	32.9
Anaheim-Santa Ana	16.3	17.2	19.3
Oxnard-Ventura	3.4	3.9	5.0
Inland Empire	10.6	14.1	22.6
San Diego	12.6	14.8	20.1
Total	100.00	100.0	100.0

Source: U.S. Department of Commerce; California State Board of Equalization; California State Department of Finance

TABLE 3.6-4
NONRESIDENTIAL DEVELOPMENT
1980 - 1991

	New Nonresidential Development Authorized 1980-91 (Percent of Total)		
	Retail	Office	Industrial
Los Angeles-Long Beach	45.1	58.6	40.1
Anaheim-Santa Ana, CA, PMSA	15.2	19.0	16.1
Oxnard-Ventura, CA PMSA	2.9	2.2	6.2
Riverside-San Bernardino, CA PMSA	23.7	5.9	26.4
San Diego, CA MSA	13.1	14.4	11.3
Total	100.0	100.0	100.0

Source: U.S. Department of Commerce; California State Board of Equalization; California State Department of Finance

RETAIL SECTOR

A field survey of retail facilities was conducted for all store types within the city of Murrieta and sphere of influence and for selected anchor store facilities within a three-mile and ten-mile radius surrounding the existing city limit. Results of the citywide survey identified a total of 934,549 square feet of retail floor space of which 132,572 square feet was vacant at the time of the survey in August 1992 - a vacancy

rate of 14.2 percent. This is an unusually high vacancy rate in retail floor space and reflects generalized over enthusiastic development of conventional retail floor space throughout Southern California for the past five years.

The locations of shopping centers included in the citywide survey are identified on the map in Figure 3.6-1. The individual centers ranked in descending order of vacancy rate are presented in Table 3.6-5.

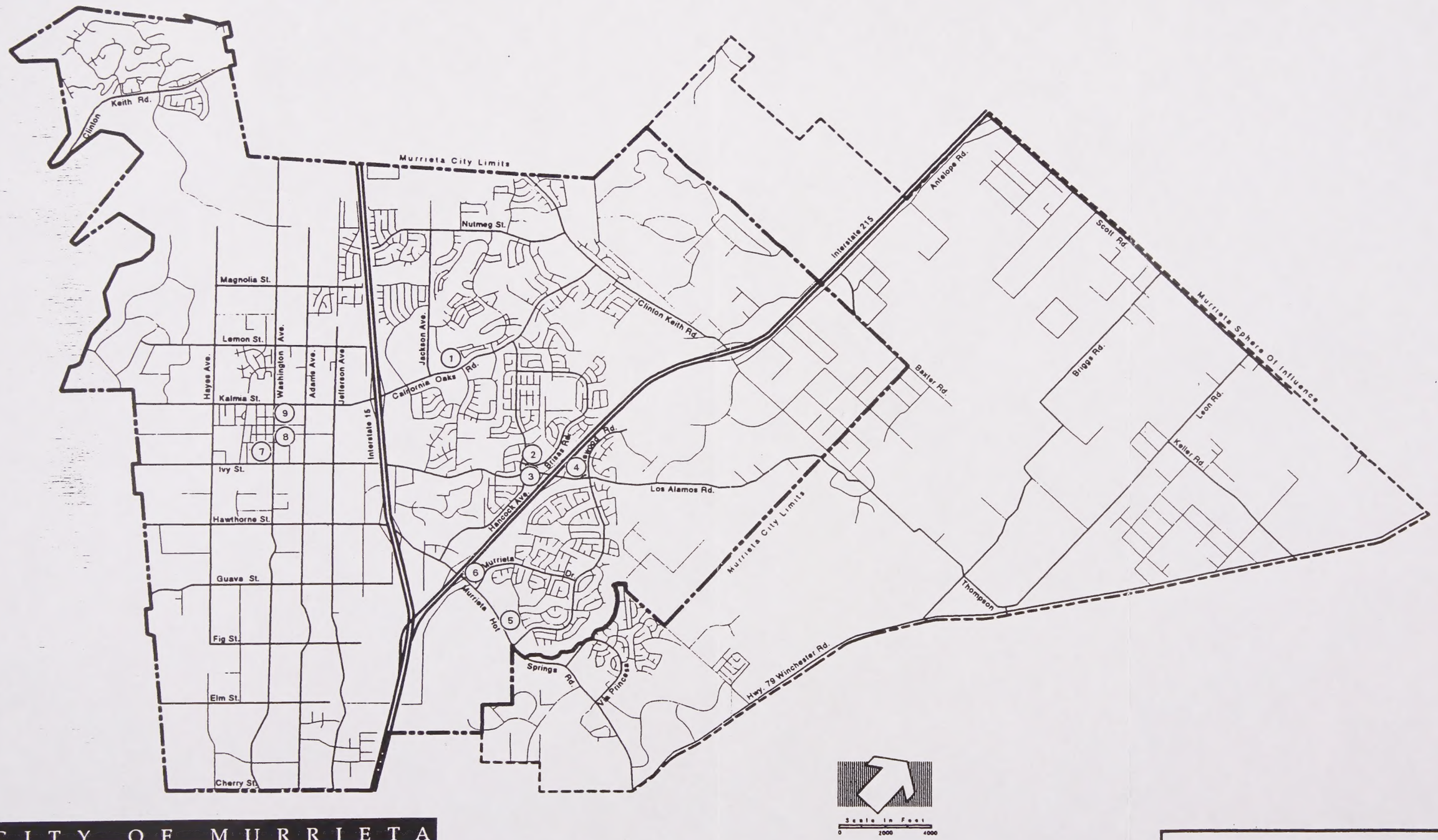
TABLE 3.6-5
RETAIL CENTERS IN MURRIETA

Center	Name	Size (Sq. Ft.)	Vacant Space (Sq. Ft.)	Vacancy Rate
9	Parkwest Plaza	18,700	11,700	62.6
7	Old Town Plaza	7,504	3,554	47.4
4	Murrieta Gateway	114,484	50,255	43.9
5	Murrieta Village	23,513	5,544	23.6
3	Rancho Las Brisas	130,764	21,739	16.6
1	California Oaks	128,199	18,470	14.4
6	Murrieta Town Center	323,569	19,102	5.9
2	Las Brisas	53,530	2,208	4.1
8	Parkwest Plaza	5,769	0	0
	Overall	803,032	132,572	16.5

The highest vacancy rates tend to be in centers completed in 1992 and/or those without an anchor tenant. The lowest vacancy rates are in established centers completed prior to 1990 and in most cases those with strong anchor tenants, although center #2 completed in June 1989 has no anchor store.

OFFICE SECTOR

Office employment is not a large share of locally based employment in the Inland Empire. Office employment relative to population is at an even lower ratio because a large proportion of the Inland Empire's employed population commutes to jobs in Los Angeles, Orange, and San Diego Counties. The small scale of the market for office space in the Inland Empire, including southwest Riverside County, generates sharp swings in estimated vacancy rates on a year-to-year basis. The current estimated vacancy rate for the Inland Empire at slightly over 20.0 percent.



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing Retail Center Locations

FIGURE 3.6-1

The actual vacancy rate identified in a survey of office space in this area conducted in August 1992 was 30.0 percent for 1.34 million square feet of office space surveyed (See Table 3.6-6). The survey identified about 936,000 square feet of occupied office space and slightly over 400,000 square feet of vacant office in Murrieta and vicinity as shown for numerous project locations shown in Figure 3.6-2.

The actual vacancy rate for office space in Murrieta in August 1992 was 20.6 percent, while in the greater area surrounding Murrieta, the overall vacancy rate was 31.0 percent. The bulk of office space in Murrieta (82.7 percent) is medical office space (82.7 percent) which in large measure is associated with the Sharp Health Care Hospital.

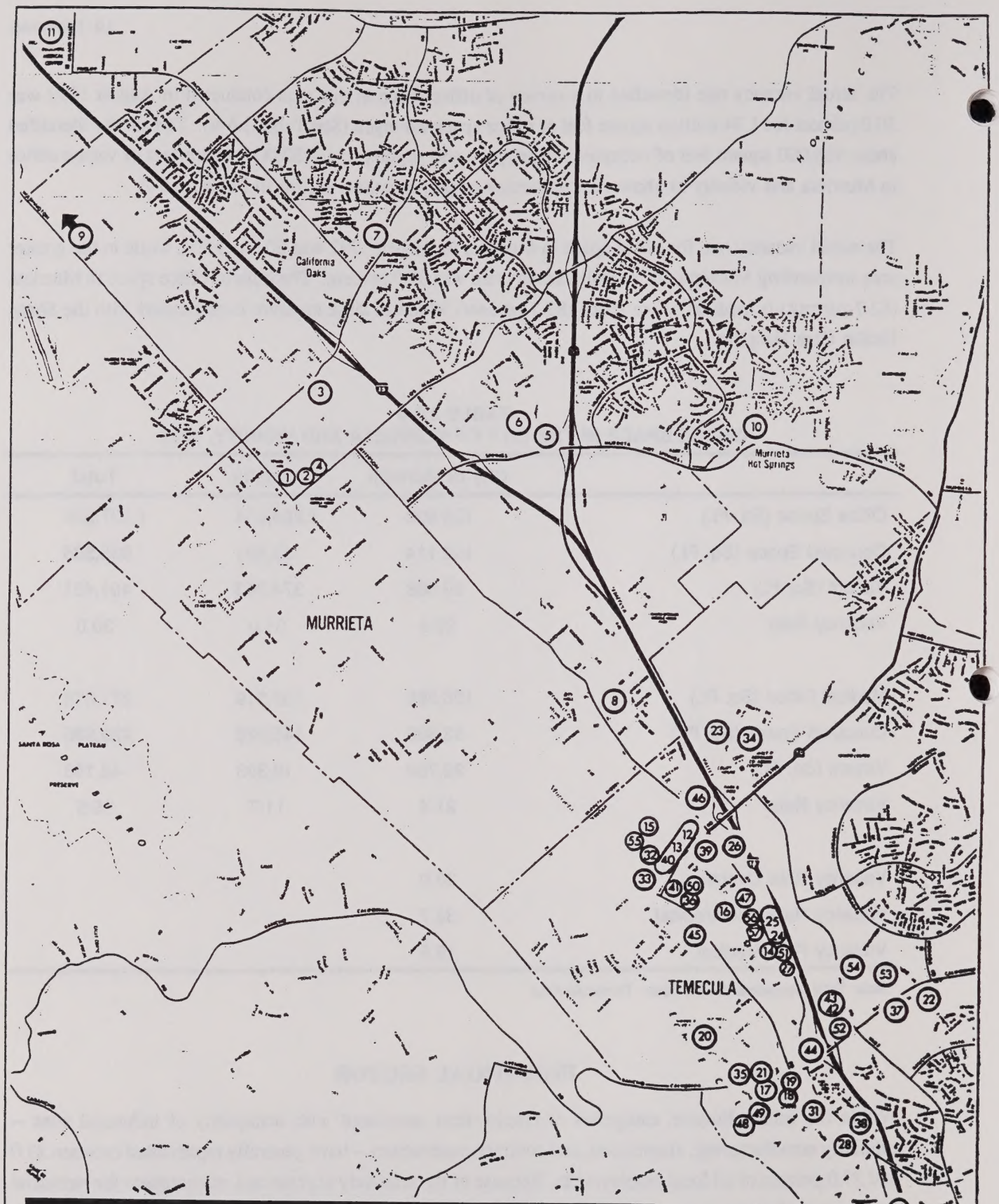
TABLE 3.6-6
OFFICE SPACE IN THE CITY OF MURRIETA AND VICINITY, 1992

	City of Murrieta	Vicinity	Total
Office Space (Sq. Ft.)	128,602	1,208,634	1,337,236
Occupied Space (Sq. Ft.)	102,114	33,691	935,805
Vacant (Sq. Ft.)	26,488	374,943	401,431
Vacancy Rate	20.6	31.0	30.0
Medical Office (Sq. Ft.)	106,369	165,319	271,688
Occupied Space (Sq. Ft.)	83,609	145,926	229,535
Vacant (Sq. Ft.)	22,760	19,393	42,153
Vacancy Rate	21.4	11.7	15.5
Vacancy Rate Overall	30.0		
Vacancy Rate Non-Medical	33.7		
Vacancy Rate Medical	15.5		

Note: Total represents the Murrieta - Temecula Area.

INDUSTRIAL SECTOR

Within the Inland Empire, categories of employment associated with occupancy of industrial sites -- primarily manufacturing, distribution, and contract construction -- have generally represented between 23.0 and 27.0 percent of all local employment. Because of the relatively unrestricted environment for industrial development in many parts of the Inland Empire, development of industrial space accelerated dramatically from 1986 until 1991. Historically, industrial development authorized by building permits has been concentrated in three specific areas, namely Corona-Norco-Riverside, Chino-Montclair-Ontario, and Colton-Fontana-Rialto-San Bernardino, which have accounted for approximately 61.0 percent of total



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing Office Projects

FIGURE 3.6-2

industrial permit valuation in the Inland Empire since 1980. Since the Cities of Murrieta and Temecula incorporated, this market area has accounted for as much as 8.3 percent of industrial development authorized in the Inland Empire.

The Murrieta area is emerging as a significant industrial location in the Inland Empire overall, due in part to the availability of a wide range of housing for households in all income classes. Expensive estate homes in the southwestern Riverside County area provide an attractive residential environment for executives while the proliferation of moderate-priced housing throughout southwestern Riverside County has attracted families that represent a large potential of local labor force.

An August 1992 survey of industrial development in the Murrieta market area including numerous projects as shown in Table 3.6-7 identified 6.28 million square feet of existing space. Only about 9.2 percent (578,700 square feet) of the industrial space surveyed in the two cities is located in the city of Murrieta. The bulk of industrial space surveyed is in Temecula as summarized below:

TABLE 3.6-7
INDUSTRIAL SPACE - 1992
(Square Feet)

	Murrieta	Percent of Total	Murrieta and Temecula Combined Area
Floor Space Inventory (Sq. Ft.)	578,700	9.2	6,283,212
Available For Lease (Sq. Ft.)	50,535	4.9	1,033,724
Vacancy Rate (Percent)	8.73		16.45
Average Annual Absorption 1990 - 1992	110,757	20.9	529,936

Between 1990 and 1992, Murrieta represented 20.9 percent of the absorption of industrial space in the combined area.

The area survey identified 1.03 square feet of vacant industrial space equal to a 16.5 percent vacancy rate. Although this is a high percentage vacancy rate, it is calculated on a relatively small base implying that the current inventory of vacant space could be absorbed in approximately 1.5 years at an average annual absorption rate of 720,000 square feet a year.

Industrial projects under construction, approved, proposed, planned, etc., for the areas surrounding the city of Murrieta represent about 787,000 square feet or one year's average annual absorption at a rate of 720,000 square feet a year. With economic recovery, vacancy rate in industrial space is expected to decline rapidly.

UTILITIES

SECTION 3.7

3.7 UTILITIES

INTRODUCTION

This section describes existing utility infrastructure and service for the city of Murrieta. Subsections will address electricity, natural gas, water, wastewater, and solid waste. The following describes existing conditions based on information provided by the numerous agencies and districts that provide utility service to the city.

WATER

The following retail purveyors distribute potable water within the plan area:

- Eastern Municipal Water District (EMWD)
- Elsinore Valley Municipal Water District (EVMWD)
- Rancho California Water District (RCWD)
- Murrieta County Water District (MCWD)

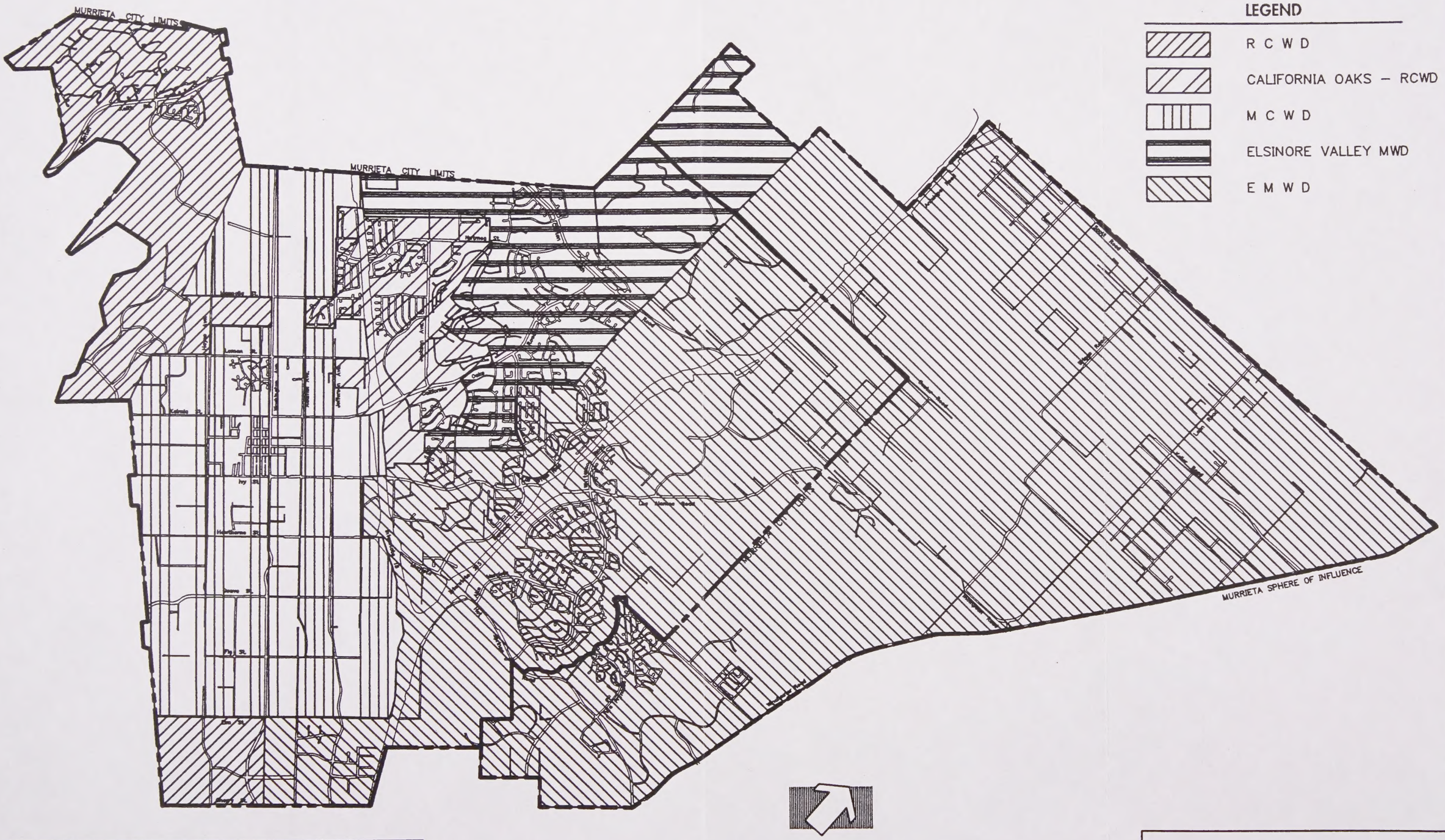
Figure 3.7-1 shows the approximate areas within the plan area that are served by each of these districts.

EASTERN MUNICIPAL WATER DISTRICT

Eastern Municipal Water District (EMWD) encompasses 534 square miles in the western portion of Riverside County. Its boundaries encompass the cities of Moreno Valley, San Jacinto, Hemet, Perris, and northeasterly portions of Murrieta lying east of Interstate 215 and Riverside. Unincorporated cities in the district include Eden Hot Springs, Gilman Hot Springs, Good Hope, Green Acres, Homeland, Juniper Flats, Lakeview, Mead Valley, Murrieta Hot Springs, Nuevo, Quail Valley, Rancho California, Romoland, Soboba Hot Springs, Sun City, Valle Vista, and Winchester. Water is provided predominately on a retail basis to domestic customers and a declining number of agricultural users. The district also supplies water wholesale to nine public entities and companies who cannot legally contract for the direct purchase of water from Metropolitan Water District. The total supply of water by the district reached 68,721 acre-feet, or 2.2×10^{10} gallons, in 1989.

RANCHO CALIFORNIA WATER DISTRICT

The Rancho California Water District is located in southwestern Riverside County about 40 miles south of Riverside and 60 miles north of San Diego. The district encompasses approximately 96,000 acres and provides retail water supply for a variety of agricultural, commercial/industrial and residential uses.



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

BOUNDARY LIMITS

FIGURE 3.7-1

The Rancho California Water District (RCWD) was originally formed in 1965 over the eastern 41,000 acres of the current boundaries, and the Santa Rosa Ranches Water District (SRRWD) was formed in 1968 over the western 46,000 acres. Each district was organized as a California Water District.

In 1977, the two districts were consolidated as a single district known as the Rancho California Water District. The original RCWD and SRRWD had approved general obligation bond authorizations of 55 million dollars and 63 million dollars respectively. Since these bond authorizations are still applicable over the original lands within each district, separate divisions known as the Rancho Division and the Santa Rosa Division have been maintained for accounting purposes. Subsequent annexations have brought the RCWD from its original 87,000 acres to the current 96,000 acres.

ELSINORE VALLEY MUNICIPAL WATER DISTRICT

The Elsinore Valley Municipal Water District (EVMWD) encompasses 125 square miles in the southwestern portion of Riverside County. Its service area extends from the northern portion of the city of Murrieta, to areas several miles north of Lake Elsinore.

MURRIETA COUNTY WATER DISTRICT

The Murrieta County Water District (MCWD) is located entirely within the city of Murrieta. This district is generally located as described below:

- South of Magnolia Street
- North of Guava Street
- East of Hayes Avenue
- West of I-15

It encompasses approximately 4,800 acres.

POTABLE WATER

Groundwater

Groundwater is an important source of supply to each of the retail purveyors mentioned. The Murrieta area overlies one of the largest underground aquifer systems in Southern California. RCWD, EVMWD and MCWD have wells in the Pauba-Temecula Aquifer. EMWD has wells in the San Jacinto Ground Water Basin. The contribution of groundwater to the total supply for each of the retail agencies is indicated below:

- EMWD: 15 domestic service wells yield 12,000 acre-feet/year (A-F/yr) (10.7 mgd) firm capacity. It also has 4 agricultural service wells yielding 2,5000 A-F/yr (2.2 mgd) capacity. These groundwater sources are nearly 16 percent of the existing system's average annual demand.

- RCWD: 37 wells yield 32,750 A-F/yr (29.2 mgd) firm capacity. The district has plans to increase annual groundwater yield to 45,000 A-F/yr (40.1 mgd). During wet years, groundwater provides as much as 85 percent of total supply. During dry years, groundwater provides 50 to 60 percent of total supply. Currently, groundwater accounts for approximately 60 to 70 percent of RCWD's potable water supplies.

- EVMWD: 10 wells yield 11,100 A-F/yr (9.9 mgd) firm capacity. This is nearly 100 percent of the existing system's average annual demand.

- MCWD: 5 wells yield 6,385 A-F/yr (5.7 mgd) firm capacity. This is 100 percent of the existing system's average annual demand.

Imported Water

Local groundwater supplies are augmented by imported water from the Metropolitan Water District of Southern California (MWD). MWD owns and operates the Colorado River Aqueduct which has been in operation since 1941 and has the capacity to deliver in excess of one billion gallons of water per day. MWD purveys water to 27 contracting agencies in Los Angeles, Riverside, San Bernardino, San Diego, Ventura and Orange counties. Western Municipal Water District (WMWD) and EMWD, being member agencies, serve as wholesale purveyors to the non-member water districts that distribute imported water (on a retail basis) within the city of Murrieta.

MWD operates several storage and filtration facilities; one of which is at Lake Skinner. Five MWD aqueducts emanate from the Skinner facilities. Line No. 4 provides treated water while lines No. 1, 2, 3, and 5 provide raw water.

EMWD has 12 connections to MWD transmission lines:

- 7 unfiltered water connections (totalling 330 cfs maximum capacity).

- 5 filtered water connections (totalling 392.5 cfs maximum capacity).

RCWD has three treated water connections to Line No. 4; Connections WR-26, WR-28 and EM-13. These three connections provide a total peak capacity of 95 cfs (or 26,000 A-F/year). Imported water accounts for approximately thirty to forty percent of RCWD's water. RCWD indicates that the demand for imported water will rise as the area develops. The cistrict has informed MWD of expected future demands and expects that MWD will be ale to meet tis increase in demand.

EVMWD obtains untreated water from WMWD via releases to the San Jacinto River at the Colorado River Aqueduct crossing near Nuevo. This river conveys water releases to the Railroad Canyon Reservoir for storage. That reservoir is owned by the Temescal Water Company. EVMWD owns rights to 3,000

A-F of that reservoir's total storage capacity. The Canyon Lake Water Treatment plant (15 mgd total capacity) treats this raw water, and provides treated water via gravity flow to two reservoirs within EVMWD's water supply system. This imported water supply is used when system demand exceeds the groundwater supply.

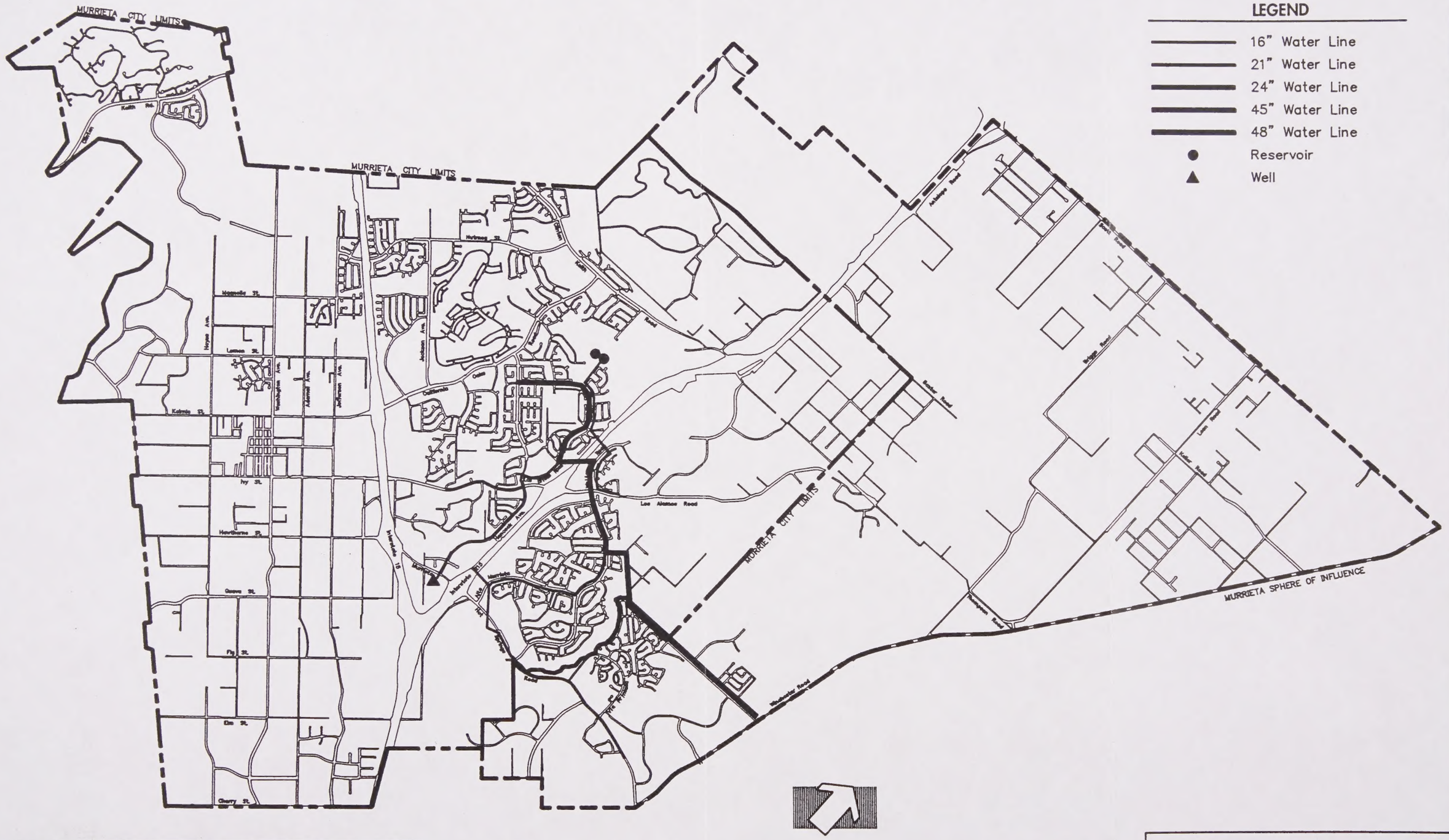
MCWD does not have any connections to MWD facilities. However, it does have two tie-ins to EMWD's distribution system.

Other Considerations

Future urbanization within the city of Murrieta can reduce groundwater recharge. The reduction of groundwater recharge attributed to urbanization is a result of pervious areas, areas which previously accepted water through infiltration, becoming impervious as a result of construction activities. Thus, recharge enhancements such as recharge ponds, injection points, or storm water retention ponds may need to be implemented in conjunction with new development.

Existing Distribution System

Figures 3.7-2 through 3.7-5 shows the backbone piping system for potable water storage and distribution within the city of Murrieta.

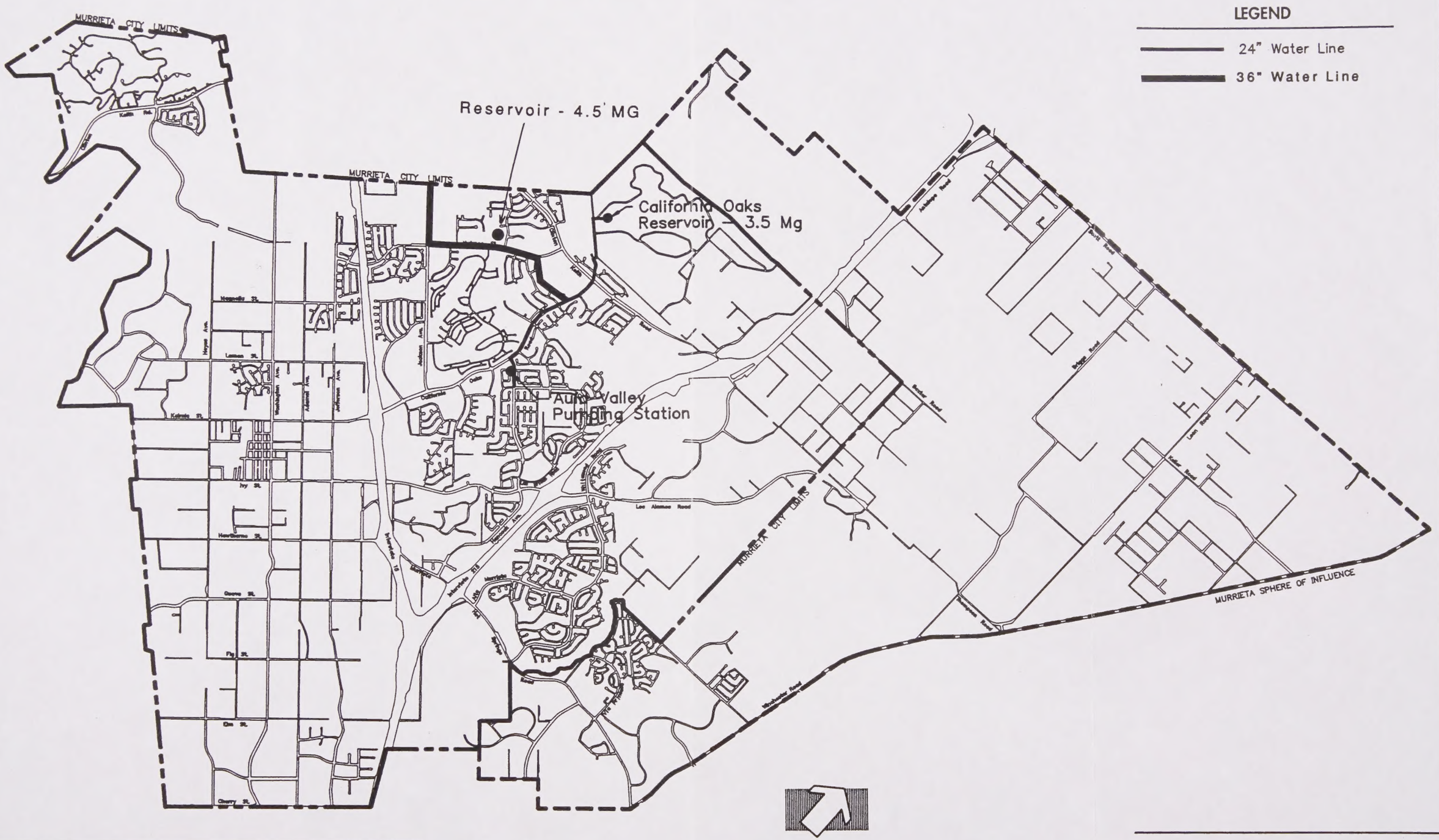


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

EASTERN MUNICIPAL WATER DISTRICT EXISTING WATER FACILITIES

FIGURE 3.7-2

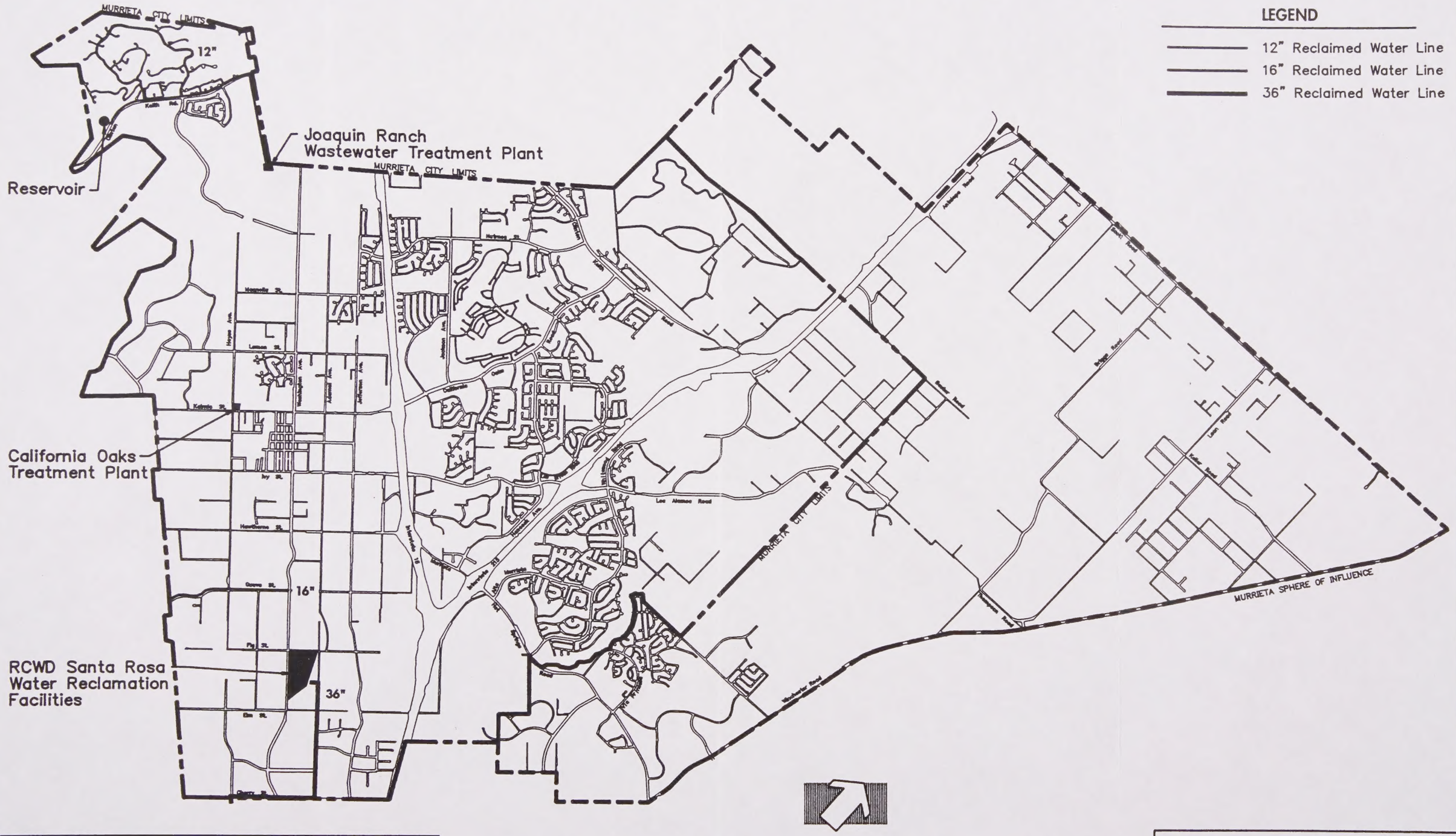


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

ELSINORE VALLEY MUNICIPAL WATER DISTRICT
EXISTING WATER FACILITIES

FIGURE 3.7-3

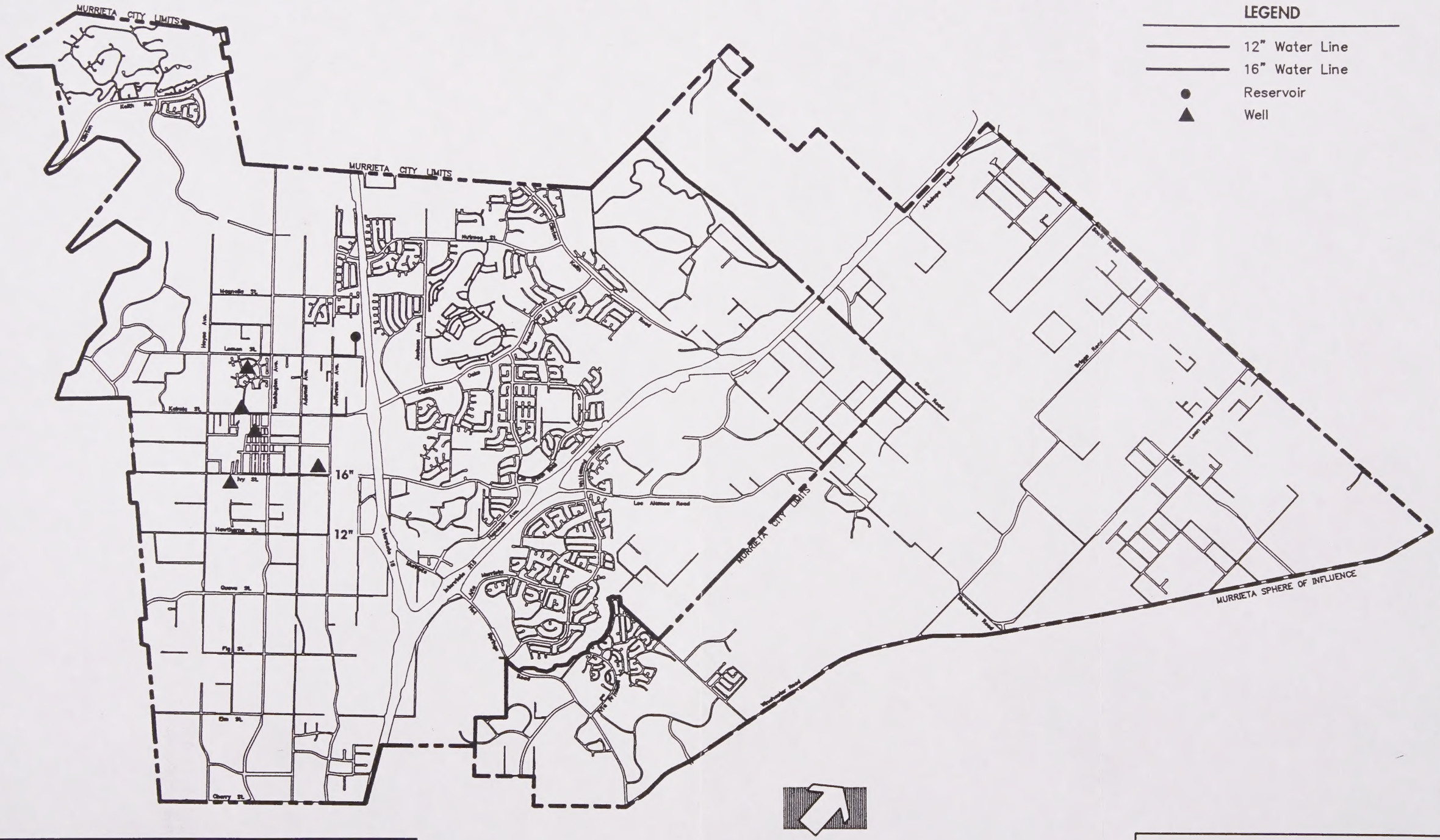


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

RANCHO CALIFORNIA WATER DISTRICT
EXISTING RECLAIMED WATER LINES

FIGURE 3.7-4



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

MURRIETA COUNTY WATER DISTRICT EXISTING WATER FACILITIES

FIGURE 3.7-5

Existing Water Reclamation Facilities

Figure 3.7-6 shows the backbone system for reclaimed water production and distribution within the city of Murrieta.

Design Criteria

General

All of the water and reclaimed water systems within the plan area are owned and operated by other agencies. Thus, the city of Murrieta has no authority to enforce design criteria on those distribution systems. However, the city does require a general understanding of typical design criteria for planning purposes.

System Pressure

The level of service that is provided for domestic use is based on water pressure. The city's design criteria should be, in general, to provide between 40 and 90 pounds per square inch (PSI) of pressure. This is consistent with sound engineering practices. This range of pressure does not inhibit usage for domestic or fire protection purposes, nor does it create problems associated with high pressure such as excessive leakage and appliance failures.

In the case of mountainous terrain, however, a 90 PSI maximum design pressure is not practical and would result in an excessive number of pressure zones. The maximum design pressure in these areas should be 125 PSI with the requirement that each house have a pressure reducing valve for in-house use in accordance with the Uniform Plumbing Code.

Supply Requirements

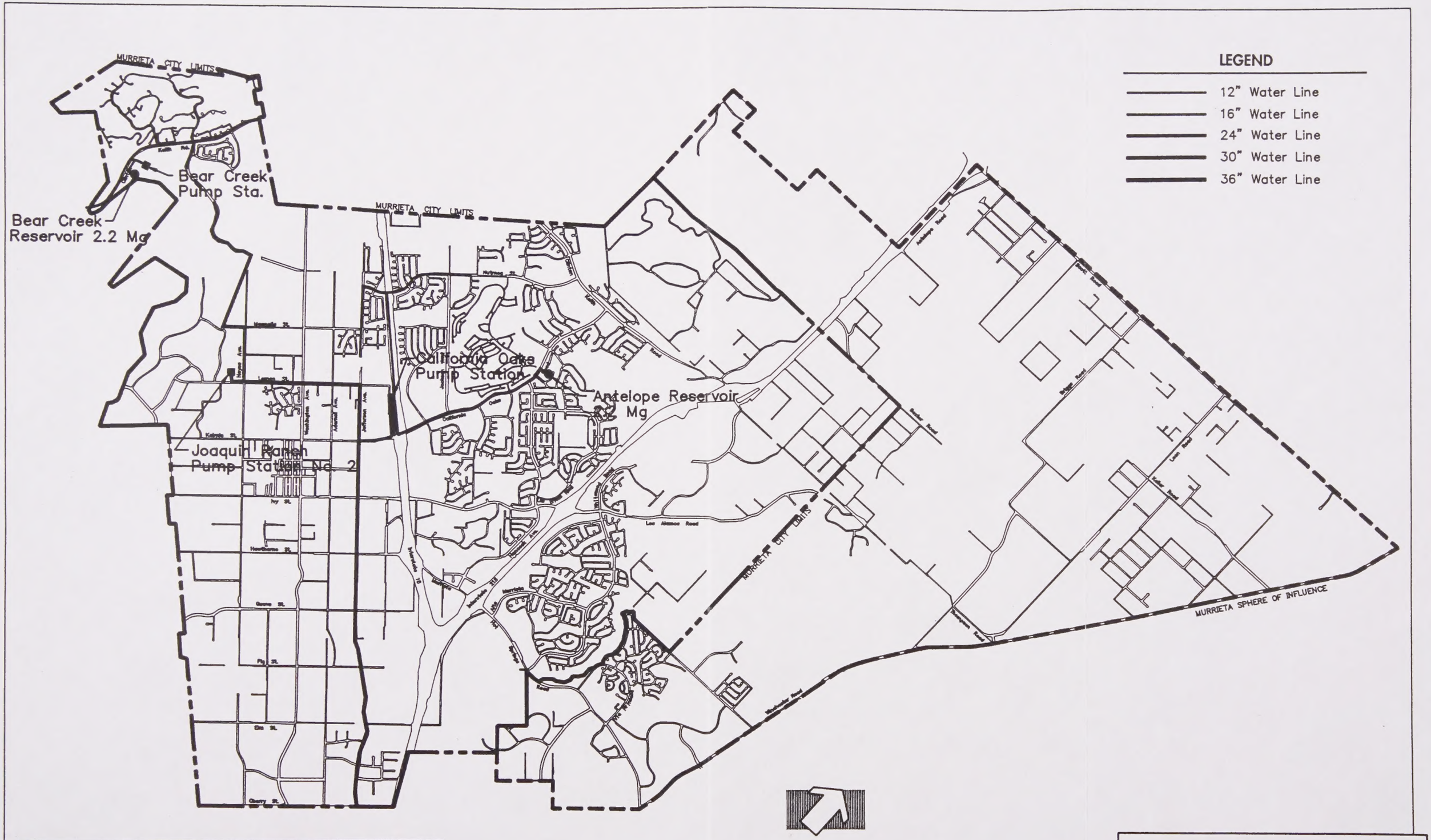
The total production capacity of sources of supply must be collectively capable of meeting maximum day demands.

Storage Requirements

Storage requirements are comprised of operational, fire, and emergency storage components. Each pressure zone should have its own storage, but deficient zones may be supplied by gravity from higher zones provided that adequately sized facilities are available.

Operational Storage

Operational storage is determined by fluctuations in hourly demand during peak summer demand periods. Typically, peak demands in excess of the maximum daily average are supplied from storage. Reservoirs are refilled during off-peak hours when demand is below the maximum day average. The volume of



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

RANCHO CALIFORNIA WATER DISTRICT EXISTING WATER FACILITIES

FIGURE 3.7-6

operational storage as an industry standard averages between 15-30 percent of maximum day demand. Theactual value is based primarily on the type of land use within a pressure zone and rainfall characteristics. The amount of operational storage must be determined based on a maximum day diurnal-demand curve. The curve is a plot of demand, expressed as a percentage of the average day demand, versus time of day.

Fire Storage

The water system must be capable of meeting maximum day demand and fire fighting requirements simultaneously. The city's fire storage criteria should be developed taking into consideration the County of Riverside Ordinance No. 460, No. 546, other applicable fire department requirements and the Insurance Services Office (ISO) guide recommendations. It also requires that all fire fighting water be provided from gravity storage and not by pumping.

Emergency Storage

Emergency storage criteria are based on many factors. The general concept is to select an emergency storage volume that will be sufficient to supply service in times of planned and unplanned equipment outage, such as pump breakdown, power failure, pipeline rupture, etc. Emergency storage is also needed as protection in case of an outage of supply from MWD. Emergency storage should be adequate to provide uninterrupted service during such an event.

Transmission Mains

In pressure zones having storage, transmission mains should be sized in conjunction with the design of pumping plants to deliver maximum day demands without drawing water from storage. The transmission main should be capable of meeting peak hour demands with water being supplied from both storage and the pumping plant. Facilities must also be sized such that the reservoirs are replenished at night. In addition, the city should require transmission mains to be capable of delivering the maximum day demand plus fire flow from storage (no pumps operating) at pressures not less than 20 PSI throughout the pressure zone based on a half-full reservoir.

Transmission mains supplying water between pumping plants and storage facilities must also be sized based on economical considerations, which include the cost of power for pumping the water.

Booster Pumping Plants

Booster pumping plants should be sized to supply maximum day demands in pump and reservoir systems. In addition, the booster pumps should be capable of providing maximum day demand under peak-hour demand conditions, with the additional flow coming from storage. The pumps must also have the capability of replenishing storage at night. Pressure zones without storage must have pumps that are capable of supplying maximum day demand plus fire flow or peak hour demand, whichever is greater.

Each pumping plant should have a minimum of two pumping units of equal capacity, each sized to provide maximum day demand, so that service will remain uninterrupted in the event that one pump is not operational. Pumping plants which consist of more than two units should have adequate capacity to meet maximum day demand with the largest unit out of service. This requirement provides system reliability and flexibility.

Reclaimed Water Systems

Reclaimed water systems use the same design criteria as described above for domestic (i.e. potable) water systems. However, they often have additional design requirements that are intended to:

- Identify those facilities as conveying non-potable water.
- Avoid cross-connections with potable water systems.
- Control (or prevent) the public's contact with areas that are irrigated with reclaimed water.

WASTEWATER

The following agencies provide public sewerage collection and treatment facilities within the study area:

- Eastern Municipal Water District (EMWD)
- Rancho California Water District (RCWD)

In addition to public sewers, private septic systems are also used within the plan area. For instance, the Murrieta County Water District (MCWD), which is entirely within the city of Murrieta has no public sewage systems. All developments within that district use private septic systems. MCWD comprises approximately 10 to 15 percent of the city's total area.

Elsinore Valley Municipal Water District (EVMWD) has no sewage facilities within the city of Murrieta. The portion of their district that is within the city of Murrieta is sewered by EMWD.

See **Water**, page 3.7-1, for descriptions of these various water/sewer agencies and their service area boundaries within the city of Murrieta.

SEWER SYSTEM CAPACITY

Eastern Municipal Water District

Eastern Municipal Water District (EMWD) operates the Temecula Valley RWRF which serves areas within the city of Murrieta.

The Temecula Valley RWRF, which is located in the southeast region of EMWD (just west of the city of Temecula) currently has the capacity to treat 6.25 million gallons daily (mgd) of full tertiary treated wastewater. The facility currently treats approximately 4.5 mgd and has approximately 1.75 mgd of available capacity.[1] Plans are presently underway to expand the facility to 10 mgd by mid-1994. Long-range plans indicate that the plant will ultimately provide 30 mgd of tertiary treatment by 2005. Effluent is disposed of by irrigation and percolation ponds. Sewer facilities are shown on Figure 3.7-7.

Rancho California Water District

Rancho California Water District (RCWD) operates two water reclamation facilities, or sewage treatment plants as summarized below:

- Joaquin Ranch Water Reclamation Facility (JRWRF)
- Santa Rosa Water Reclamation Facility (SRWRF)

Both of these facilities are located within the city of Murrieta, west of I-15. The Joaquin Ranch WRF is north of the Murrieta County Water District (MCWD). The Santa Rosa (SBR) WRF is south of MCWD.

The Joaquin Ranch WRF, which began operation in 1984, has a maximum capacity of 0.60 mgd (ADWF). Presently, sewage inflow is approximately 0.20 mgd. It's effluent fully complies with Title 22, Division 4, California Administrative Code. Conformance with Title 22 is required to utilize effluent from a wastewater treatment plant for landscape and food crop irrigation. All of the effluent is presently used to irrigate the Bear Creek Golf Course.

The Santa Rosa WRF, which began operation in 1989, is a secondary treatment facility with a maximum capacity of 5.0 mgd (ADWF). Presently, sewage inflows range between 0.25 to 0.30 mgd. Percolation ponds are presently this facility's only method for effluent disposal (per RWQCB Order No. 87-125 and Addendum No. 1 thereto). The maximum percolation rate is 1.0 mgd. Thus additional means for effluent disposal must be provided if this treatment plant is to operate at its design capacity. Sewer facilities for the RCWD are shown in Figure 3.7-8.

SEWER COLLECTION SYSTEM COMPOSITION

Eastern Municipal Water District Collection System

The existing Temecula Valley collection system consists of 282,200 feet of sewer pipe ranging between 12" to 30" in diameter. Force mains and gravity lines within the Study Area are shown on Figure 3.7-7.

Sewage Lift Stations

All of the wastewater collected within the service area must be pumped to the treatment plant's headworks. The Warm Springs (16.1 mgd), New Pala (10.1 mgd), Diaz (6.8 mgd) and Golden Triangle # 2 (2.6 mgd) sewage lift stations are the major pumping facilities. There are four smaller lift stations. None of these pumping facilities are within the city of Murrieta.

Treatment Plant

The treatment plant process is as generally described below:

> The headworks consist of barscreens, barminuters, and an aerated grit chamber. After leaving the grit chamber, wastewater is conveyed to the primary clarifiers, aeration basins, secondary clarification tanks and chlorine contact tank. The secondary effluent is stored in ponds for flow equalization prior to denitrification using anoxic filters with methanol feed. The denitrified effluent is stored and distributed to local farmers for irrigation.

Rancho California Water District Collection System

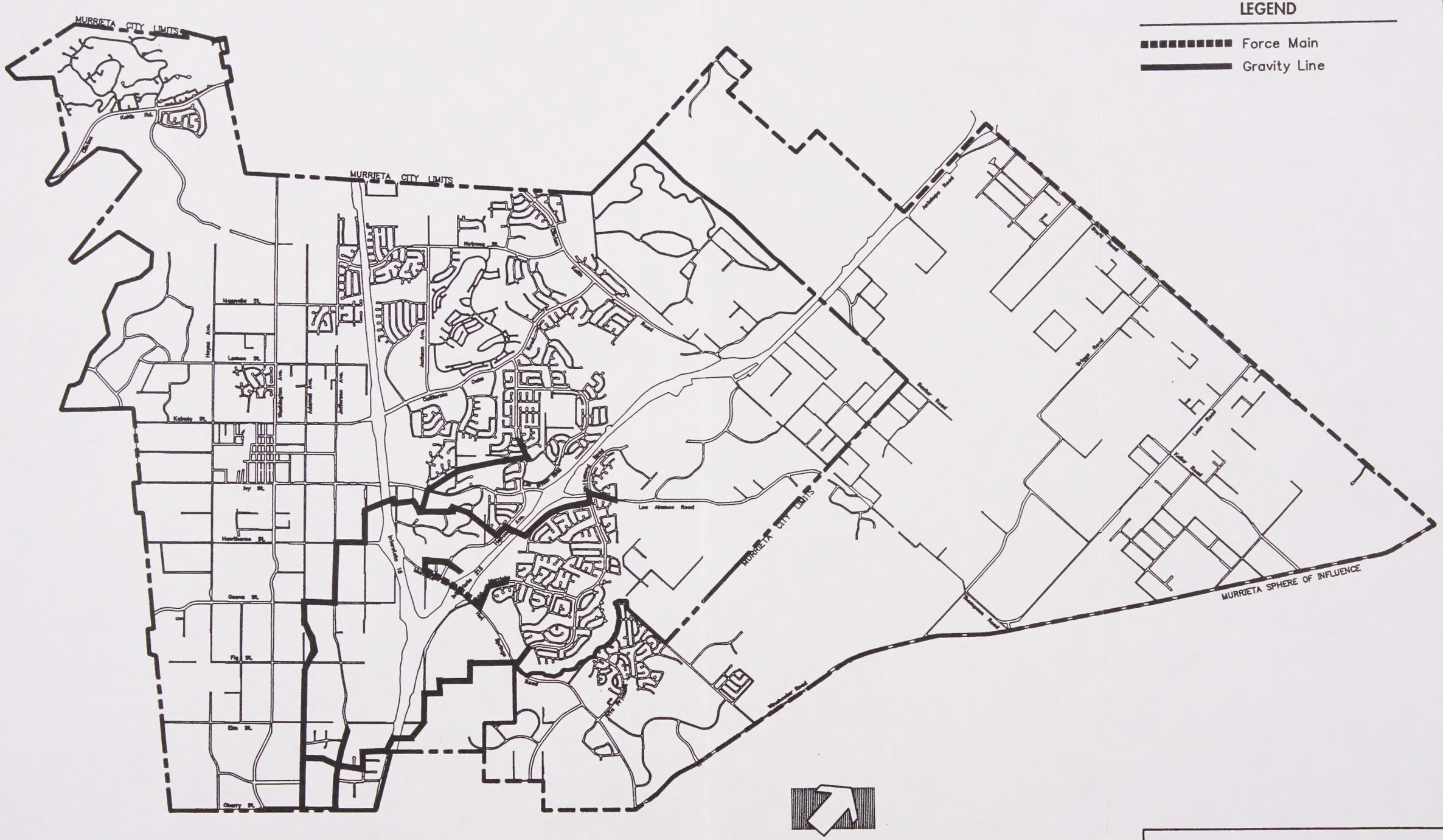
The existing wastewater collection system includes two major gravity trunk sewers. The longest trunk sewer is referred to as the Washington Avenue Trunk Sewer. This trunk sewer was designed to collect wastewater and to transport these flows to the district's existing Santa Rosa WRF, which is located on Washington Avenue south of Fig Street and west of Adams Avenue. This trunk sewer can also be utilized for transporting wastewater to EMWD's Temecula Valley WRF if the sewer were extended south of the Santa Rosa WRF, to that plant.

The Washington Avenue Trunk Sewer was designed to collect and transport wastewater flows from the following areas:

- The EVMWD service area primarily northeasterly of Interstate 15.
- Specific Plan No. 173 (California Oaks) northeasterly of Interstate 15 near California Oaks Road.
- The south Joaquin Ranch Development, Vista Murrieta, RTC 50, and RTC 60.
- Various developments within the MCWD.

This sewer system consists of 29,000 feet of pipe ranging between 18" to 24" in diameter.

The second major trunk sewer within the existing wastewater collection system is referred to as the California Oaks Sewage Transmission Main (COSTM). This trunk sewer was designed to serve Specific Plan No. 173 (California Oaks). Since the California Oaks development area is split between EVMWD

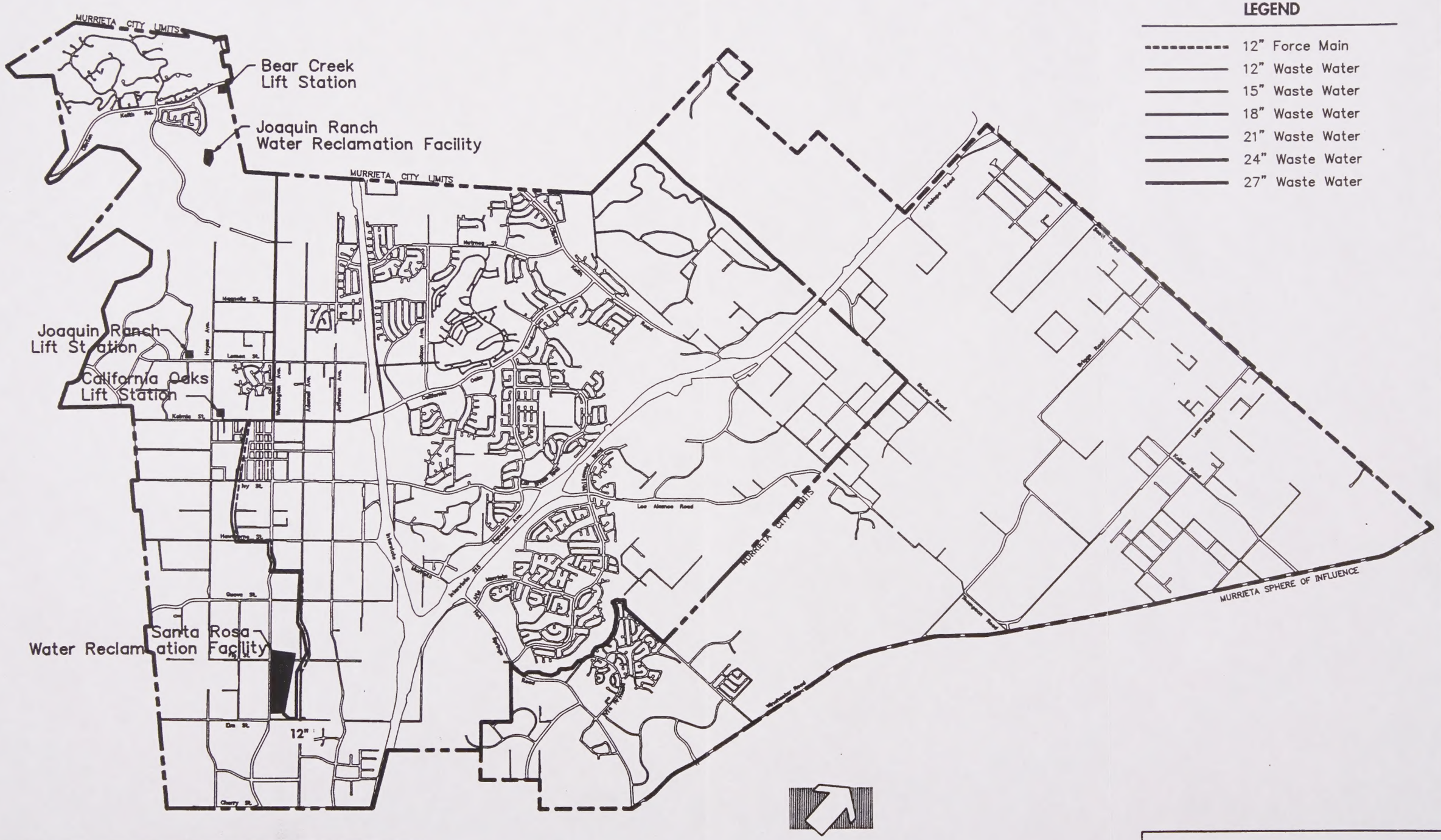


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

EASTERN MUNICIPAL WATER DISTRICT
EXISTING SEWER FACILITIES

FIGURE 3.7-7



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

RANCHO CALIFORNIA WATER DISTRICT EXISTING SEWER FACILITIES

FIGURE 3.7-8

and RCWD service areas, some of the Specific Plan 173 (California Oaks) wastewater flows are generated from areas within RCWD and some within EVMWD. The COSTM consists of 13,000 feet of 15-inch VCP line.

The Washington Avenue Trunk Sewer connects to the above mentioned COSTM at two locations:

- At the intersection of Kalmia Street and New Clay Street
- At the intersection of Kalmia Street and Washington Avenue

The RCWD Wastewater Collection System is shown in Figure 3.7-8.

Sewage Lift Stations

There are three sewage lift stations within the existing RCWD wastewater collection system. The California Oaks sewage lift station discharges through an 8" diameter force main (3,500 feet in length), and provides approximately 1.3 mgd capacity. The San Joaquin sewage lift station discharges through a 10" diameter force main (9,500 feet in length), and provides approximately 1.8 mgd capacity. The Bear Creek sewage lift station discharges through a 6" diameter force main (2,500 feet in length), and provides approximately 0.60 mgd capacity. All of these pump stations are within the city of Murrieta.

Treatment Plant

The Joaquin Ranch WRF has the following major treatment processes:

1. Influent Pump Station
2. Screens and Grit Chamber
3. Oxidation Ditch
4. Clarification
5. Flow Equalization
6. Filtration
7. Chlorination
8. Effluent Pumping

In addition to these facilities there are two reclaimed water storage ponds located approximately 7,000 feet south of the plant. These ponds are sized for ninety days of storage of reclaimed water during wet weather periods as required by the Regional Water Quality Control Board (RWQCB).

Solids disposal from this facility are handled on-site through existing sludge drying beds.

In addition to Waste Management of Inland Valley, there are several other trash collection companies that currently provides service for the commercial and industrial uses in and outside CSA 143 as well as the residential area outside the CSA, including the Sphere Area. The haulers include Western Waste, Inc., CR&R, and Canyon Lake Disposal. These haulers do not have specific boundaries, but compete for each individual contract.

The city of Murrieta is located within the regional service areas of the El Sobrante and Double Butte Landfills. They city may also transport waste to other county landfills and has in the past used Mead Valley Landfill.

The Double Butte Landfill is to be permitted to accept a maximum of 600 tons of refuse per day and as of January 1991 had a remaining capacity of about 132,000 tons. The landfill accepted a daily average of 227 tons of refuse in 1991 and is estimated to be closed in late 1993. Plans are currently being considered for construction of a Material Recovery Facility in the mid county region. Establishment of this facility would replace the capacity of the Double Butte Landfill. If the facility is not established, the Double Butte waste stream would have to be diverted to other operating solid waste facilities for recycling and landfilling.

The El Sobrante Landfill is permitted to accept 2,000 tons of refuse per day and in January of 1991 had a remaining capacity of about 4,798,000 tons. The landfill accepted a daily average of 970 tons of refuse in 1991 and is estimated to reach capacity in 2001. The El Sobrante Landfill is planned to expand beyond its present landfill footprint, adding approximately 35 years to the landfill's operation.

The Mead Landfill is estimated to have a permitted capacity of 1,100 tons of refuse per day. The landfill accepted an average of 542 tons of refuse per day in 1991, and is estimated to reach capacity by January of 1998.[2]

In response to regional and statewide concerns, Assembly Bill 939, the California Integrated Solid Waste Management Act of 1989, and its implementing regulations (adopted on March 19, 1990), have established mandatory goals for the reduction of solid waste. The main purpose of the statute is to reduce, recycle, and reuse solid waste to the maximum extent feasible. AB 939 requires that cities and counties reduce the amount of solid waste being sent to landfills by 25 percent over the next three years (by January 1, 1995), and by 50 percent over the next eight years (by January 1, 2000). To help insure that cities meet this mandate, they are required to prepare a Source Reduction and Recycling Element ("SRR Element") for approval by the California State Solid Waste Management Board (CSWMB). Additionally, counties must develop Integrated Solid Waste Management Plans incorporating the plans for all cities located within the county. The city is currently beginning the process of preparing a SRR Element and a in compliance with AB 939. Subsequent to preparation of the Element, the city will need to submit the document to Riverside County for its ultimate incorporation into the County Integrated Solid Waste Management Plan.

Currently curbside residential refuse service in the city does include a curbside program for recycling and diversion of greenwaste. Containers are provided for newspaper and other recyclables (such as glass, aluminum, plastic) and stickers are provided for labling trash containers and bags that contain greenwaste.

Based on the U.S. Census population figure for the city of 19,076 residents and a average estimated generation rate of 1.31 tons per capita, per year, the city currently generates approximately 24,989 tons of solid waste per year.[3]

NATURAL GAS

The Southern California Gas Company (SCG) provides natural gas service to Riverside, San Bernardino and Imperial counties. The city of Murrieta is located within SCG's Ramona District of the Inland Empire. Figure I-24 identifies the service area of the Ramona District whose headquarters is located at 25200 Trumble Road, in Romoland. The Southern California Gas Company provides the city of Murrieta with customer and distribution services. However, most residents in the Sphere Area are currently using propane.

Distribution Service

The consumer supply of natural gas is installed and maintained by the distribution department. The department is responsible for pipeline installation, inspection, repair and maintenance of pipeline facilities.

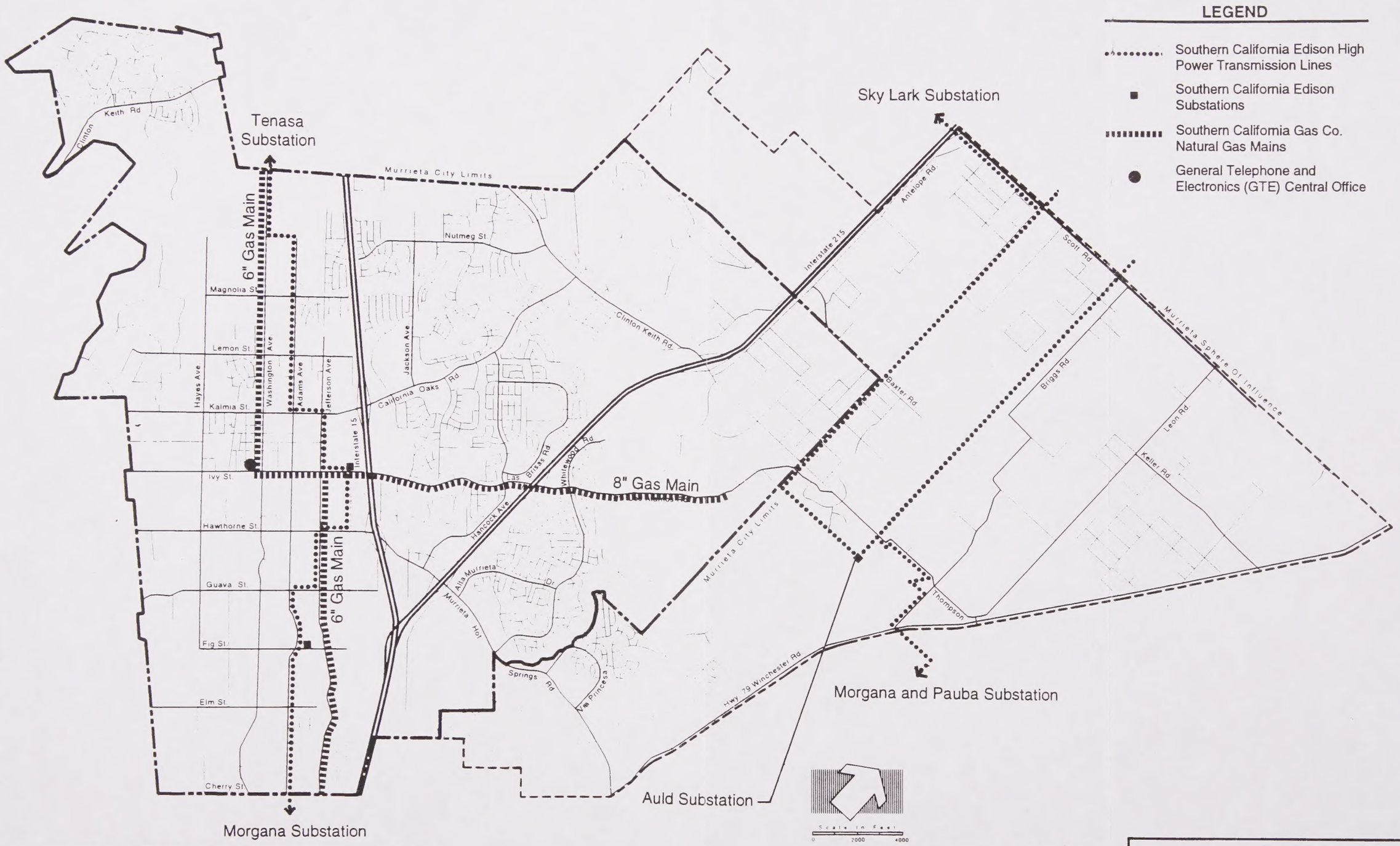
In order to install the main gas supply lines, SCG obtains encroachment permits from the appropriate city and/or county agencies in advance of actual construction. The high-pressure gas lines that run through the city of Murrieta, are shown on Figure 3.7-9.

For service and meter installations and maintenance procedures SCG possesses a type of "blanket permit" agreement whereby the work is simply performed and the city or county is notified after the work is completed. SCG's policy of buying and storing natural gas for peak period use has, in the past, ensured that their supply network was more than adequate to provide service to all new customers.

ELECTRICITY

All electricity is provided to the city of Murrieta by the Southern California Edison Company (SCE). There is a local SCE office located at 27450 Ynez Road, Suite 124 in Temecula. The locations of existing electric transmission lines and power generation substations are identified on Figure 3.7-9. There are a total of six existing substations that service the area, of which three are within the city of Murrieta and Sphere Area.

The hierarchy of power lines which transport power from the generation stations to the customers is as follows: transmission line, sub-transmission line, and distribution line. Existing transmission lines that



Source: Southern California Edison, Southern California Gas Co., General Telephone and Electronics.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Utilities Map

FIGURE 3.7-9

service the city are roughly located west of and parallel to I-15, along Scott Road, Briggs Road and the Menifee right-of-way extension. Existing sub-transmission lines are located throughout the city either underground or overhead within the streets right-of-way. Distribution lines run from the sub-transmission lines directly to the clients and are typically located on private property either underground or overhead. New services to subdivisions are typically underground while the more rural areas are serviced by overhead lines.

SCE estimates average residential consumption at 800 kilowatts per hour (kWh) in winter months and 1,100 kWh in summer months. Commercial consumption rates average from 200 to 10,000 kWh depending on the type of use and seasonal factors.

In order to obtain and utilize electrical services within the city of Murrieta, the SCE charges a small fee for a meter, monthly service fees, kilowatt per hour charges, and a fuel adjustment fee. There is an additional fee for extending electrical services which is based on the front footage of a residential lot.

At this time, there are no agreements with the city for joint use of SCE right-of-way areas for open space and recreational use. They have agreed with other cities and property owners to allow greenbelt areas and/or walking paths and trails to be maintained in their easement area.

At present, the SCE is not planning to construct additional substations or transmission facilities within the boundaries of the City or its Sphere Area. However, as the city matures, further consideration of facilities may identify a need for expanded facilities.

TELEPHONE

General Telephone and Electronics (GTE) California, Inc. provides telephone service to the city of Murrieta and Sphere Area. The capacity of the network will increase as the demand warrants. All typical telephone services are available to the residents of the city.

GTE has a Murrieta central office on Washington Street, west of Ivey Street. (See Figure I-24) There are also remote switching units which act in the capacity of the central office. At the present time, three such structures exist in the Murrieta area and are located at Murrieta Hot Springs Road, California Oaks Road, and Calle del Oso Oro. Part of the Sphere Area is served by the Sun City central office which is located on Bradley Road in Sun City. As far as can be defined, there are no deficiencies in the existing network nor are any anticipated. GTE will continue to enhance its network with the latest in technology as it becomes available.

CABLE TELEVISION

There are two cable television companies in the Murrieta area: Inland Valley Cablevision and King Videocable Company. Together, these two companies provide enhanced communication services via television to the city of Murrieta and the Sphere Area. Each company provides cable services and programs to their customers.

Inland Valley Cablevision

The Inland Valley Cablevision office is located at 4077 West Stetson Avenue, in Hemet. (The local office is at 26459 Ynez Road, Suite C, in Temecula). As indicated in Figure I-25, the company's current service area covers portions of the city and Sphere Area. Inland Valley Cablevision provides access to local programming and local information on a community channel which currently airs a program that discusses Murrieta city issues.

King Videocable Company

The King Videocable Company provides services similar to those of Inland Valley Cablevision. The King Videocable Company is an affiliate of King Broadcasting Company and operates within Riverside County. The Riverside County Operations office is located at 566 Birch Street in Lake Elsinore and serves approximately 22,000 customers in the region.

ENDNOTES

1. Personal communication, Dave Crosely, Senior Engineer, Eastern Municipal Water District, Temecula Valley Regional Wastewater Reclaimation Facility, October 23, 1992.

2. Sung Key Ma, Planner, County of Riverside Waste Management, written correspondence, September 29, 1992.

3. Generation rate is based on Riverside County disposal estimates for two comparable cities in southwestern Riverside County, adjusted downward by 10 percent for recycling.

PUBLIC SERVICES

SECTION 3.8

3.8 PUBLIC SERVICES

INTRODUCTION

This section assesses existing public service conditions in the study area for the following public services: fire protection, law enforcement, schools, libraries, and parks and recreation. Existing facilities, staffing, and levels of service will be identified along with any current deficiencies or constraints facing the responsible agencies or departments.

This analysis is based on information supplied by the Murrieta Police Department, the Murrieta Fire Protection District, Riverside County parks and libraries, and the Murrieta Valley Unified, Menifee Union, Perris Union, Hemet Unified, and Murrieta Valley School Districts.

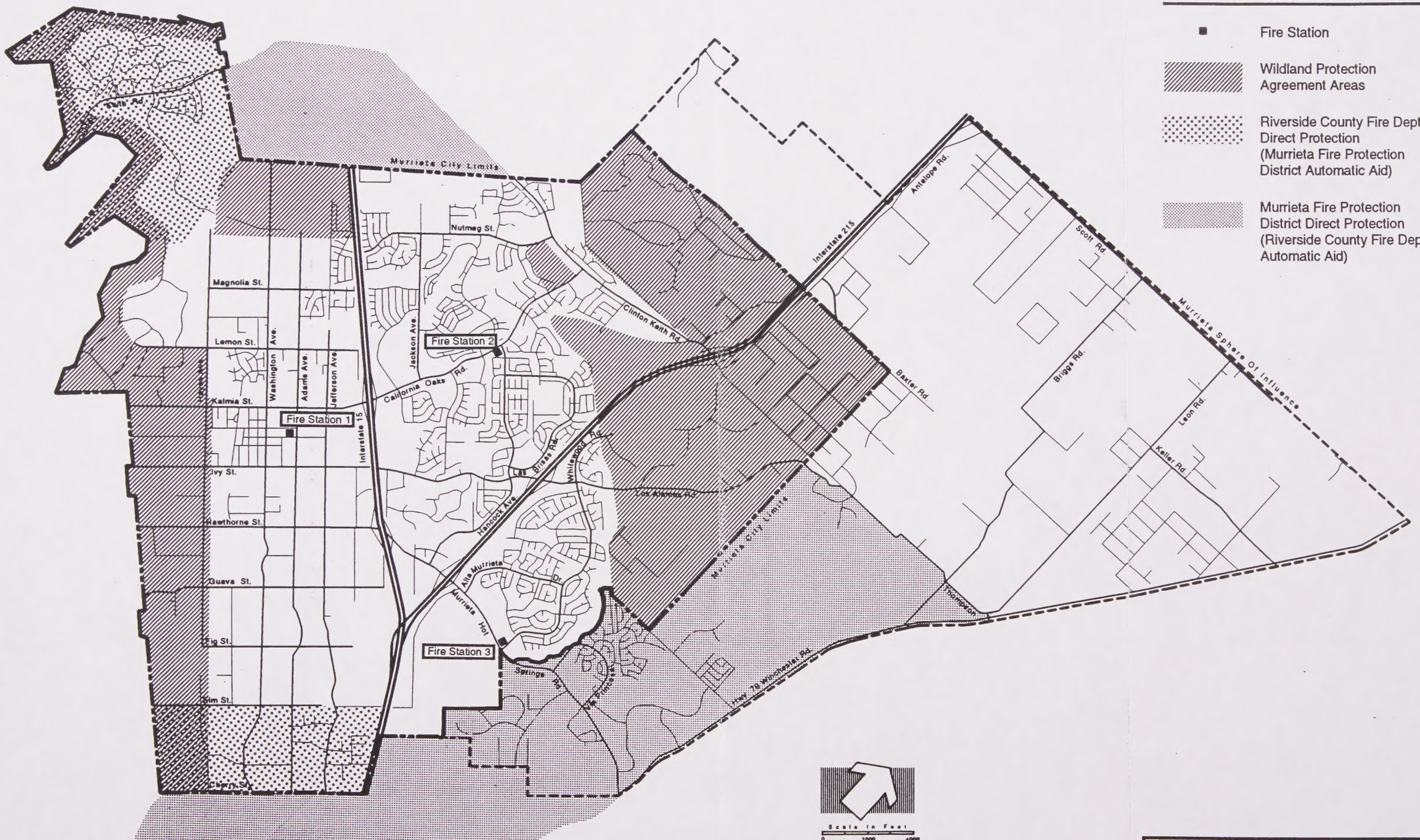
FIRE PROTECTION

The Murrieta Fire Protection District (MFPD) provides fire protection services for the city of Murrieta. MFPD services include fire suppression, prevention, planning and engineering, and emergency medical services. It also provides weed abatement, inspection, public education, disaster preparedness, statistical resources, and urban search and rescue services to Murrieta residents. Although the district's service area boundaries are the same as the incorporated city limit boundaries, the MFPD operates independently from the city of Murrieta and may serve areas outside the city. The district was established in 1947 as a non-enterprise special district under the Health & Welfare Code. The fire district is governed by a three-member board of commissioners that is elected to serve four-year terms.

The Sphere Area is served by the Riverside County Fire Department (RCFD) through a contract with the California Department of Forestry (CDF). The MFPD also provides service to a portion of the Sphere Area by means of an Automatic Aid Agreement with the RCFD. The MFPD has also contracted with the CDF for wild-land fire protection. For specifics on wild-land fire protection see Section 3-12 Health and Safety. Figure 3.8-1 shows the service area boundaries for the fire protection services provided by the Murrieta Fire Protection District, the Riverside County Fire Department, and the California Department of Forestry.

At this time, the fire district has two fully operational fire stations and a third station which is constructed but not operational. Fire station locations are also identified on Figure 3.8-1.

Fire Station #1 is located at 41825 Juniper Street and sits on approximately 3.6 acres of land in the older section of the city. This facility houses the district administrative offices, maintenance facilities, an



Source: Riverside County Fire Department, Murrieta Fire Protection District.

Fire Stations and Service Area Boundaries

FIGURE 3.8-1

apparatus room, training facilities, and the fire house. It currently is the location for three engines, two brush trucks, a rescue squad, a 95 foot aerial platform quint, and staff vehicles. The rescue squad at Station #1 provides most of the automatic aid calls to the Murrieta Hot Springs, and Engine #1 makes most of the mutual aid calls to Temecula and other areas adjacent to the city of Murrieta.

Fire Station #2 is located at 40060 California Oaks Road, in the city area between the I-15 and 215 freeways. This facility covers approximately 1.1 acres at the intersection of California Oaks Road and Hancock Avenue. This site houses two engines, one brush truck, and an Ambulance which is assigned to the city of Murrieta.

Fire Station #3 is located on .95 acres at 39985 Whitewood near the Murrieta Hot Springs Road intersection. The facility is intended to house one engine, one brush truck, and one 95 foot aerial platform vehicle.

Each station is manned seven days a week, 24 hours a day with a 4-person paid engine company. In addition, the 95 foot aerial platform is staffed 24 hours per day at Station #1. The rescue squad, two engines, and two brush trucks are staffed by volunteers from Station #1, and two engines and one brush truck are staffed by volunteers from Station #2. The Murrieta Fire Protection District has a total of 43 full-time employees and 50 volunteers. The staffing and equipment breakdown for the MFPD's stations are summarized in Table 3.8-1.

TABLE 3.8-1
MURRIETA FIRE PROTECTION DISTRICT
STATION LOCATIONS, EQUIPMENT, AND STAFFING

LOCATION	STAFFING	EQUIPMENT
Station 1 41825 Juniper Street	7 firefighters per shift	3 Engines, 2 Brush Trucks, 1 Rescue Squad, 1 - 95 ft. Aerial Platform Quint
Station 2 40060 California Oaks Road	4 firefighters per shift	2 Engines, 1 Brush Truck, and 1 Ambulance
Station 3 (not operational) 39985 Whitewood Road		N/A

Source: Murrieta Fire Protection District, August, 1992.

The MFPD operates an approved American Heart Association regional training center, with 16 instructors on staff for participation in the Emergency Medical Technician-Defibrillator (EMT-D) program. The Murrieta Fire Protection District is also affiliated with the Fire Technology Program at Mt. San Jacinto College where a variety of classes in fire technology are being taught in the fire district training room.

The MDPD does not have an adopted service ratio standard. However, current staffing provides 1.68 fire personnel per 1,000 residents which is above the National Fire Protection Association recommended ratio

of 1.5. The Murrieta Fire Protection District Fire Protection Plan, which outlines future staffing and equipment needs recommends a ratio of approximately 1.38 career-uniform firefighters per 1,000 population based on a build-out population of 60,000. Based on current plans for expansion, the fire district does not anticipate deficiencies in providing adequate levels of fire suppression and EMS services.

In fiscal year 1991-92, the MFPD responded to 1,427 calls for service. Of the total calls, 1,117 were within the city, 310 were mutual aid/automatic aid calls, and 224 were to areas adjacent to the city such as Murrieta Hot Springs and Temecula. The MFPD estimates that the average district wide response time ranges from 4 to 4.5 minutes from time of dispatch. In the more rural and outlying areas of the city, response times can be longer (10 minutes or less) particularly in the northeastern portion of the city. In rural areas such as these, longer response times are justified under federal standards due to the low density of development.[1]

The Insurance Services Office (ISO) is an organization that rates fire departments ability to provide fire suppression services based on factors such as fire flows, water availability, staffing, and equipment. In a recent evaluation, the MFPD received a rating of four which is slightly better than average. When Station 3 becomes operational, the rating is anticipated to be upgraded to three.

In order to meet the future fire protection needs of the city, three additional stations are planned. A site has been identified for Station 4 #4 near the intersection of Nutmeg Street and Douglas Avenue in the western portion of the city. Stations #5 will be located near the intersection of Adams Avenue and Elm Street in the southern portion of the city, and Station #6 is proposed near the intersection of Keller Road and Antelope Road in the northern portion of the city. The ultimate staffing total for the MFPD with all six stations operational is anticipated to include 27 captains, 18 engineers, and 50 firefighters.[2] In addition to these stations which are included in the MFPD's long-range plans, the district has had discussions with landowners in the Sphere Area for two additional station sites: at the intersection of Clinton Keith Road and Meadowlark Road and at the future intersection of Briggs Road and Keller Road.

LAW ENFORCEMENT

There are three law enforcement departments which have jurisdiction within the city of Murrieta and its Sphere Area: the Murrieta Police Department, the Riverside County Sheriff's Department, and the California Department of Highway Patrol. The Murrieta Police Department's service area boundaries correspond to the present city Limits. The Riverside County Sheriff's Department provides services to the Sphere area, and the California Department of California Highway Patrol has jurisdiction along the two freeways which traverse the city (I-15 and 215) and along Highway 79.

Murrieta Police Department

The Murrieta Police Department was formed on August 1, 1992. The police facility is located at 40080 California Oaks Road, next to Fire Station #2. They provide services only within the city limits and not to the Sphere Area, except in life threatening situations. The Department employs 34 full-time personnel

which includes one chief of police, one lieutenant, one fire sergeant, 18 police officers, eight dispatchers-clerk and one secretary. This provides a sworn officer-to-population ratio of .8 officers per 1,000 citizens.

Services provided by the Murrieta Police Department include receiving and dispatching emergency calls for police, fire and medical services via the 911 system; responding to police calls for services providing visible patrols, enforcing all laws, investigating traffic collisions and providing crime prevention education programs.

Since the Murrieta Police Department has just recently begun service, long-range planning for outlining future staffing needs for the community has not been completed. The department anticipates that the new facility will provide adequate space for the next 5 to 10 years. There are no plans to change the departments level of service in the 1992-1993 budget.

Riverside County Sheriff's Department

The Riverside County Sheriff's Department will continue to provide services to the Sphere Area, until the area is annexed to the city. The Southwest Station is located at 30755-A Auld Road, which is next to the French Valley Airport, east of Winchester Road. This new facility is 32,000 square feet in size and is a full service police facility. Adjoining the Southwest Station will be a 530-bed county jail, due to open in November, 1992.

The Southwest Station is currently staffed with 107 employees which include 62 field deputies. Thirty-one deputies are assigned to the city of Temecula, four are assigned to service areas and the remaining 27 deputies area assigned to the unincorporated area, which includes the Sphere Area. The County Board of Supervisors has set a ratio goal of 1.05 sworn officers per 1,000 citizens.

California Highway Patrol

The California Highway Patrol (CHP) has jurisdiction along Interstate 15, Interstate 215, and Highway 79 within the city of Murrieta and the Sphere Area. There is one officer assigned to each freeway beat during the day and afternoon shifts. During the night shift (10:00 p.m. - 6:00 a.m.), there is normally one, two-officer unit assigned the responsibility of both beats.

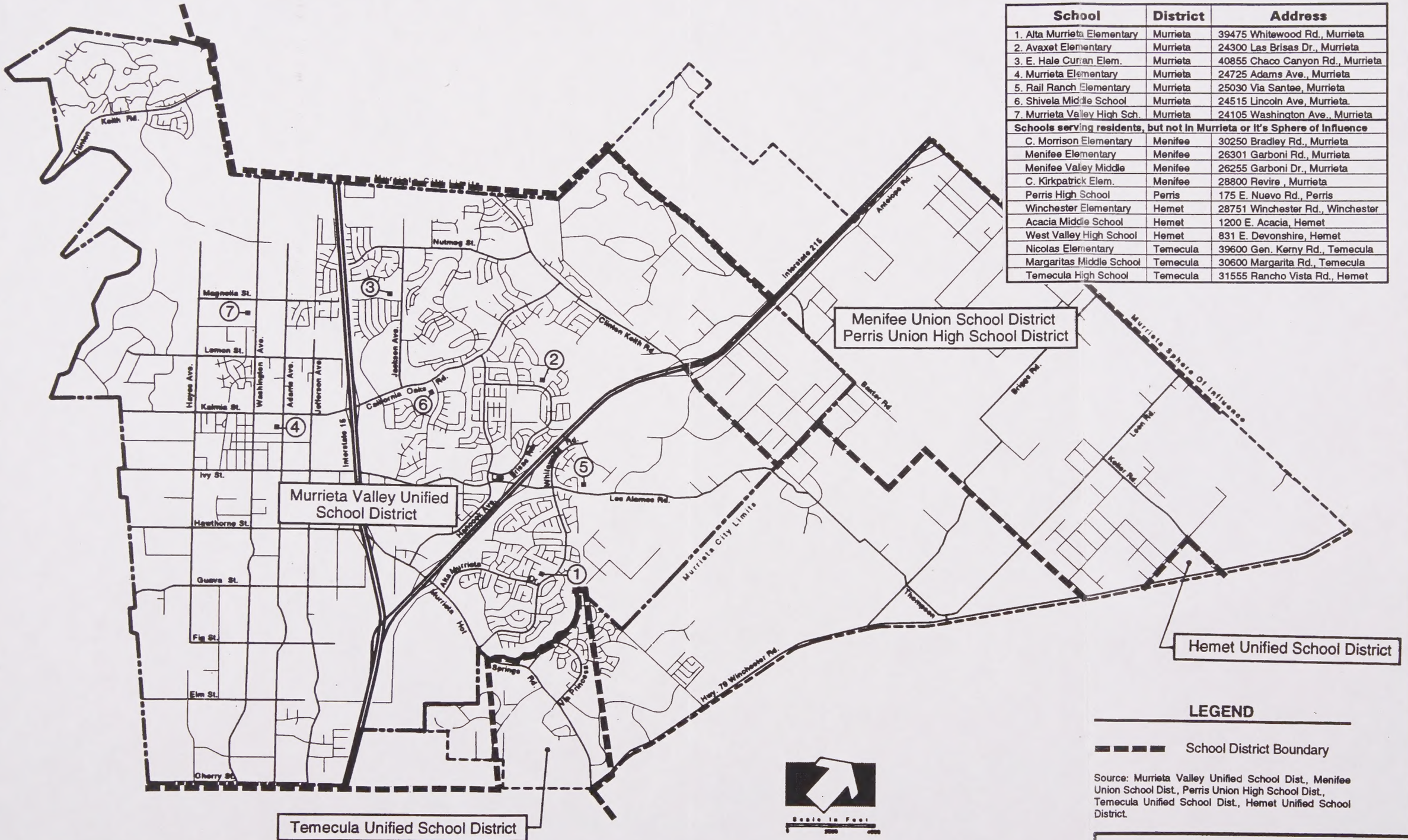
PUBLIC SCHOOLS

There are five school districts which provide school services to the residents of the city and Sphere Area:

- Murrieta Valley Unified School District
- Murrieta Valley School District
- Menifee Union School District
- Hemet Unified School District
- Perris Union School District

Boundaries of these districts are shown on Figure 3.8-2.

School	District	Address
1. Alta Murrieta Elementary	Murrieta	39475 Whitewood Rd., Murrieta
2. Avaxet Elementary	Murrieta	24300 Las Brisas Dr., Murrieta
3. E. Hale Curran Elem.	Murrieta	40855 Chaco Canyon Rd., Murrieta
4. Murrieta Elementary	Murrieta	24725 Adams Ave., Murrieta
5. Rail Ranch Elementary	Murrieta	25030 Via Santee, Murrieta
6. Shivela Middle School	Murrieta	24515 Lincoln Ave, Murrieta.
7. Murrieta Valley High Sch.	Murrieta	24105 Washington Ave., Murrieta
Schools serving residents, but not in Murrieta or It's Sphere of Influence		
C. Morrison Elementary	Menifee	30250 Bradley Rd., Murrieta
Menifee Elementary	Menifee	26301 Garboni Rd., Murrieta
Menifee Valley Middle	Menifee	26255 Garboni Dr., Murrieta
C. Kirkpatrick Elem.	Menifee	28800 Revire , Murrieta
Perris High School	Perris	175 E. Nuevo Rd., Perris
Winchester Elementary	Hemet	28751 Winchester Rd., Winchester
Acacia Middle School	Hemet	1200 E. Acacia, Hemet
West Valley High School	Hemet	831 E. Devonshire, Hemet
Nicolas Elementary	Temecula	39600 Gen. Kerny Rd., Temecula
Margaritas Middle School	Temecula	30600 Margarita Rd., Temecula
Temecula High School	Temecula	31555 Rancho Vista Rd., Hemet



LEGEND

School District Boundary

Source: Murrieta Valley Unified School Dist., Menifee Union School Dist., Perris Union High School Dist., Temecula Unified School Dist., Hemet Unified School District.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

School Districts Boundaries and Facilities

FIGURE 3.8-2

The Murrieta Valley Unified School District provides the majority of school services for the city and the southeasterly portion of the Sphere Area. Approximately 640 acres in Section 35, adjacent to Interstate 215 and Clinton Keith Road is in the Menifee Union School District for elementary and middle school and the Perris Union School District for high school. A very small portion of the Sphere Area, west of Winchester Road, south of Keller Road and east of Pourroy is in the Hemet Unified School District. Murrieta Valley School District boundaries include a portion of the Sphere Area, in the Murrieta Hot Springs neighborhood. Figure 3.8-2 lists all the schools that serve Murrieta and Sphere Area.

Murrieta Valley Unified School District

Murrieta Valley Unified School District boundaries cover an irregularly shaped area consisting of more than 60,000 acres, or 95.8 square miles and includes most of the city of Murrieta. The district presently has seven school sites that include four K-5th grade and one K-8th grade elementary schools; one 6th-8th grade elementary school; one 6-8th grade middle school; and one high school. The current enrollment and permanent capacity of the district's schools are presented in Table 3.8-2.

TABLE 3.8-2
MURRIETA UNIFIED SCHOOL DISTRICT SCHOOLS

School	Current Enrollment	Standard Capacity	Remaining Capacity
Murrieta Elementary 24105 Washington Ave.	618	720	102
Avaxat Elementary 24300 Rancho Las Brisas Dr.	642	600	-42
Alta Murrieta Elementary 39475 Whitewood Rd.	693	720	-19
E. Hale Curran Elementary* 40885 Chaco Canyon Rd.	813	780	-33
Rail Ranch Elementary* 25030 Via Santee	840	900	60
Shivela Middle School* 24525 Lincon Ave.	1,324	1,215	-109
Murrieta Valley High School 24105 Washington Ave.	1,179	2,400**	1,211
Total	6,155	7,335	1,170

Source: Murrieta Valley Unified School District, October 14, 1992.
* Multi-track year rounded.
** At completion.

During the final construction phase of Murrieta Valley High School, approximately 225 12th grade students are attending Murrieta Valley High School. Completion of construction is expected in July, 1993, at which time Murrieta Valley High will serve all 9th-12th grade students.

The district's administration offices are at 26396 Beckman Court next to the Murrieta City Hall. Their maintenance operation and transportation facility is located at 25090 Jefferson and the purchasing and warehouse facility at 26811 Hobie Circle.

Murrieta Valley Unified School District has been the fastest growing district in the state. Last year their growth rate was 27 percent and they anticipate a growth rate of 15 percent for 1992.

At the present time, approximately 61 percent of the students are housed in temporary modular classrooms. All the schools are on year-round schedules. The district received over $27 million from the Proposition 152 state-wide facilities bond. This money will be used for the preliminary planning and development of the next phase of schools which includes 11 school projects currently in the State Building Program. There is, however, a concern regarding the financing of the infrastructure for these schools. In addition, construction of permanent facilities for Avaxat Elementary, E. Hale Curran Elementary and Alta Murrieta Elementary will be completed next year. The district is also planning to construct permanent facilities for Rail Ranch Elementary and Shivela Middle School, once funding is available.

Growth in the district has occurred, and will continue to occur, at unprecedented rates; and, as a result, the District is pursuing an aggressive schedule for the acquisition and development of new schools to support anticipated growth. Table 3.8-3 shows the district's planned school facilities and their estimated dates for completion.

A number of the school sites listed in Table 3.8-3 are in the process of being acquired pursuant to specific plan requirements, and consistent with tract map design, authorization, and conditions of approval. The remaining sites have not been specifically located but are targeted for general geographic locations based on anticipated residential development patterns. It is the intent of the CIP that the ultimate site specific location of schools will be made in conformance with the City of Murrieta General Plan.

In order to determine student generation factors for future development, the district initiated a telephone survey based on Riverside County approved methodology. A total of 248 respondents, including occupants of single-family detached and attached dwelling units and mobile homes, were queried on the number of children in the household by age, family size, and the age of the head of the household. The survey concluded that the district should assume for planning purposes that over the next five years, each new housing unit in the city will on average produce .85 K-12 students. The breakdown of generation rates for the various grade levels are shown in Table 3.8-4.

TABLE 3.8-3
MURRIETA VALLEY UNIFIED SCHOOL DISTRICT
PLANNED SCHOOL FACILITIES

Planned School Facilities	Anticipated Completion Date	Standard Capacity (students)
High Schools		
un-named Continuation High School	FY 93-94	200
Winchester High School	FY 98-99	2,400
Middle Schools (6-8)		
Thompson Middle School	FY 94-95	1,000
un-name Middle School #3	FY 96-97	1,000
Elementary Schools (K-8)		
De Luz Elementary	FY 95-96	750
Elementary Schools (K-5)		
Tenaja Elementary School	FY 95-96	750
Tovashal Elementary School	FY 94-95	750
Cole Canyon Elementary	FY 96-97	750

Source: Murrieta Valley Unified School District.

TABLE 3.8-4
STUDENT GENERATION FACTORS FOR NEW HOUSING

Grades	Current Year	Year 2	Year 3	Year 4	Year 5	Year 6
Elementary (K-5)	0.29	0.38	0.42	0.45	0.47	0.53
Middle School (6-8)	0.14	0.12	0.13	0.15	0.16	0.14
High School (9-12)	0.10	0.15	0.17	0.18	0.18	0.17
Total K-12	0.53	0.65	0.71	0.79	0.81	0.84

Source: Murrieta Valley Unified School District, Survey of New Homes, June, 1992

To date, the district has focused it's expenditures on relocatable and temporary classrooms and school facilities, and land acquisition and leases for establishment of the schools listed above. In addition to these priority expenditures, the district also requires non-school facilities to maintain efficient school services. Conceptual plans, design schemes and budgets are being formulated for a Maintenance Operations Transportation (MOT) facility, a warehouse, an administration facility, and a food service facility.

Financing for Schools

Revenues to finance school facilities come from one or a combination of the following three basic sources:

- State Government
- Local Bonding Authorizations
- Private Sector (development)

Funding, including state bond authorizations and development fees required by state law, are not adequate to offset the costs of land, site assessment and remediation, construction and relocation. Due to these limitations, the District focuses on four primary revenue sources that are viewed as critical to the successful provision of school facilities.

- General Obligation Bonds
- Bonds pursuant to the State School Construction Program
- Collection of State Authorized Development Fees
- Impact Mitigation & Reimbursement Agreements

Projected revenues are speculative, with the exception of General Obligation Bonds and the State Bonds, and cannot be assumed as revenue commitments. Development fees are subject to development trends, and Impact Mitigation and Reimbursement Agreements are subject to successful negotiations.

After more than one year of dialogue with growth districts, Riverside County Office of Education, California Building Industry, and the Riverside County Planning Department, Resolution No. 92-164 regarding school facilities was approved by the Riverside County Board of Supervisors. Pursuant to the resolution, the district submitted to the county a mitigation plan containing detailed information regarding school mitigation requirements when new development impacts require compensation beyond the statutory developer fee limits.

School district staff has developed a mitigation cost analysis indicating the most current estimates working with the Office of Local Assistance, Riverside County Office of Education, Riverside County Planning Department, and the California Building Industry Association to build a "plain vanilla" permanent school in the State Building Program.

The district has also worked closely with the city of Murrieta. The district and the city have agreed on a condition of approval to be included in the planning approval documentation that provides a working mechanism for the development community and the school district to negotiate Impact and Mitigation Agreements.

Menifee Union School District

The Menifee Union School District boundaries include the Sphere Area north of the Murrieta limits. There are currently two elementary schools and one middle school that serve the residents in this district. Enrollment and capacity figures for the district's schools are outlined below:

School Name	Location	Current Enrollment	Capacity	Remaining Capacity
Chester Morrison Elementary	30250 Bradley Road	665	900	235
Menifee Elementary	26301 Garboni Road	1,104	1,160	56
Menifee Valley Middle School	26255 Garboni Road	882	900	18
Totals		**2,651**	**2,960**	**309**

Source: Menifee Union School District

The newly built Callie Kirkpatrick Elementary School does not currently serve the residents, but could in the future. All schools are on year-round schedules.

Perris Union School District

The Perris Union School District boundaries overlap the Menifee Unified School District boundaries within a portion of the city of Murrieta and the Sphere Area. The students in this area would attend the Menifee Union School District for elementary and middle schools and the Perris Union School District for high school. Perris High School (10-12 grade), is located at 175 East Nuevo Road, Perris. Enrollment is currently under capacity.

Hemet Unified School District

A small triangular portion of the Sphere Area, bounded by Keller Road to the north, Pourroy to the west and Winchester Road on the east, is within the Hemet Unified School District. The schools serving this area and their current enrollment capacities are listed below.

School Name	Location	Current Enrollment	Capacity	Remaining Capacity
Winchester Elementary	28751 Winchester Road	992	518	-474
Acacia Middle School	1200 E. Acacia Road	1,758	932	-826
West Valley High	831 E. Devonshire Road	1,116	1,083	-33
Total		**3,866**	**2,533**	**-1,333**

Source: Hemet Unified School District

Enrollment at all of these schools are currently over capacity. The District indicated that inter-district transfers would be available upon request by the residents.

Temecula Unified School District

The general area of the Murrieta Hot Springs neighborhood is within the Temecula Unified School District boundaries. Schools serving this area and their current enrollment and capacities are listed as follows:

As previously mentioned, Murrieta Valley High School is currently housing the Murrieta Unified School District 12th grade students until July 1993, at which time Murrieta Valley High will be completed.

School Name	Location	Current Enrollment	Capacity	Remaining Capacity
Nicolas Valley Elementary	39600 N. General Kearny Rd	700	1,200	500
Margarita Middle School	30600 Margarita Rd	1,003	1,300	297
Murrieta Valley High	31555 Rancho Vista Rd	2,479	3,100	621
Total		**4,182**	**5,600**	**1,418**

Source: Temecula Unified School District

College

Mt. San Jacinto Community College has a Menifee Valley campus at the corner of Antelope and La Piedra Roads, which serves the residents of the city of Murrieta and Sphere Area. Also, the University of California, Riverside offers extension courses in Temecula, at 40935 County Center Drive. The Murrieta Valley Unified School District is currently comprised of five elementary schools, two middle schools, and one high school. Existing school sites are all developed with permanent or relocatable facilities in accordance with prior county approvals, and have been purchased or leased by the district.

LIBRARIES

The Temecula Library, a branch of the Riverside County Free Library, is the chief provider of library service to the city of Murrieta and its Sphere Area. The County Free Library is an independent taxing district in the county of Riverside and serves 15 cities, including Temecula and Murrieta and all unincorporated areas of the County except those served by Beaumont, Banning and the Palo Verde Library Districts. The County Supervisors annually contract with the Board of Library Trustees of the Riverside Public Library to administer the County Free Library. The combined Riverside City and County Public Library (RCCPL) system supports 27 branches, two bookmobiles and the Central Library in the City of Riverside.

The Temecula Library is located at 4100 County Center Drive, Temecula, in the Walter P. Abraham County Administrative Center. It is open 57 hours per week. It has 15,000 square feet and houses 63,967 volumes. The estimated service population is 61,000 persons. There are 16.38 full-time equivalent staff scheduled to work in the branch.

The Temecula Library provides the full complement of library services to Murrieta and its sphere area. Over 3,000 Murrieta residents used their borrower cards at the Temecula Library to check out over 40,000 items during the first six months of this year. This is a 33 percent increase over the previous six-month period. They expect use by Murrieta residents to account for 35 to 40 percent of the activity at the Temecula Library.

Based on County Library standards, service at the Temecula Library is deficient and fails to meet the Library standards of 1.2 volumes per capita and .5 square feet per capita. By these standards, for a service population of 61,000 persons, 73,200 volumes and 15,500 additional square feet are needed. County-wide there are .97 volumes per capita and .12 square feet per capita.

When Temecula and Murrieta incorporated, it became clear that one 15,000-square foot facility would not be adequate to serve the whole area of the former Murrieta Census District. Even less adequate was the one bookmobile stop in the new Murrieta city limits. For 1991-1992, the library planned for a leased store front operation to begin in Murrieta. However, cuts to the library's operating budget prevented implementation of this plan.

Instead, a second bookmobile stop was begun at California Oaks and the library petitioned County Supervisors to use reserve funds for a planning study of the area. Information, Management and Planning Services (IMPS), was selected and is currently developing a community analysis of the Murrieta, Wildomar, Lake Elsinore area with the goal of identifying what library services the community wants and where the library facilities should be located. Operating revenue will be available through the library district tax but there is no guaranteed funding source for library buildings. The results of the community analysis will assist the application for funds from the California Library Construction and Rotation Bond Act of 1992. The library can also apply for federal funds through the Library Services and Construction Act (LSCA) Title II. This mechanism used to build both the new Temecula Library and the slightly older Moreno Valley Library.

PARKS AND RECREATION

The city of Murrieta has a number of park and recreational opportunities that are available and that influence the quality of life within its community. Parkland and recreational programs provide relaxation and relief, as well as places for active recreation and sports activities. Park and recreation opportunities that are provided within the city and Sphere Area include public parks, neighborhood tot lots, trails for equestrian, pedestrian and bicycle use, and recreational classes, sports leagues and special programs. Current and future levels of park and recreation services need to be adequate for serving the resident and workforce population as it

changes over the next fifteen to twenty years. The following discussion addresses the current status of Murrieta's park facilities as well as recreational services and opportunities. Applicable standards and regional recreation opportunities are also discussed.

County Service Area 143

Riverside County has created a number of Community Service Areas to provide community services. County Service Area (CSA) No. 143 was established to serve a number of developments in the Rancho California-Temecula-Murrieta area with park and recreation services, slope and street median maintenance, street lighting, and landscape maintenance. Drainage maintenance was later added to the service area's list of responsibilities.

According to the provisions of state law, the county's responsibility for service areas is concluded when that area becomes incorporated, and the responsibility for services is transferred to the new city. The portion of CSA 143 that is located within the city of Murrieta and possibly the Sphere Area will be transferred to a Community Service District (CSD) currently being formed for Murrieta.

On August 11, 1992, the Board of Supervisors of Riverside County approved the creation of a Community Service District for the city of Murrieta, to become effective July 1, 1993. The approved CSD and/or city departments will ultimately provide the services that CSA 143 is currently providing. The boundaries for the new District have not been determined at this time, although it is anticipated it will include all of the city of Murrieta. Until the city takes over responsibility for providing park and recreation services, the County of Riverside Parks Department, through CSA 143, will continue in its current capacity.

CSA Funding

The main funding mechanism for CSA 143 is a land parcel charge that is included on the tax bills for all services except recreation. Recreation services are funded through direct charges to the participants, more commonly known as user fees, for each program or recreational league.

Current CSA Services

CSA 143 provides the following services to annexed and dedicated property within the CSA 143: street lighting, soil conservation (drainage areas, slope maintenance, streetscapes/medians, and fuel eradication), park and recreation (maintenance contracts and recreation activities on the parks or otherwise), refuse collection, extra police protection, and bike lanes (in the streets). Benefit zones have been created in order to provide an equitable means for charging for the services. The charges are compiled according to the services which are received and are incorporated on the yearly property tax bill.

The CSA 143 is divided into three divisions in order to provide services to community residents. These divisions are:

Landscape Maintenance Division (LMD)

The LMD is responsible for the maintenance of all parks, slopes, streetscapes and open space dedicated to CSA 143.

Senior Services Division (SSD)

The SSD offers programs for adults 50 and above. In addition to specialized recreational activities the SSD provides information and referral services, transportation via a Dial-a-Ride program and a Meals on Wheels food program for homebound seniors.

Recreation Division

The recreation division provides a majority of the public recreational activities occurring throughout the city. These include adult and youth educational programs, adult and youth recreational programs, sports leagues, swimming classes and activities at specific park locations.

Existing Parks

An inventory of CSA park sites and facilities is shown in Table 3.8-5. There are fifteen parks, totalling 125.75 acres of parkland. As shown in Figure 3.8-3, they are, however, located within a narrow band of the General Plan Area and, as a result, much of the city and study area is not served by parks within an acceptable walking distance. Most of the parks provide open grassy areas, and many offer barbecue or picnic facilities. The California Oaks Sports Park is the largest (22 acres) and offers the most comprehensive array of recreational facilities.

Based upon a 1990 population of 23,739 (city and Sphere) and the total existing park acreage of 125.75 acres, the Murrieta Plan Area currently has a ratio of approximately 5.30 acres of parkland per 1,000 population. This ratio is above the county standard of 4.0 acres per 1,000 population and below the National Recreational and Parks Association (NRPA) minimum standard of 6.25 acres per 1,000 population.

Presently, Murrieta Valley Unified School District and CSA 143 have a joint use agreement that allows for use of school facilities by the recreation and senior services divisions. Classrooms and athletic facilities are used for various classes and programs provided by CSA 143.

Parks Under Development

Currently several parks are in the planning or construction phases. These include three in California Oaks; two in the Rancho Las Brisas area; one in Alta Murrieta; two in the Warm Springs area and three others scattered throughout the City. These total 48.5 additional acres of parkland. As these parks are completed they will be ultimately annexed into either the CSA or CSD.

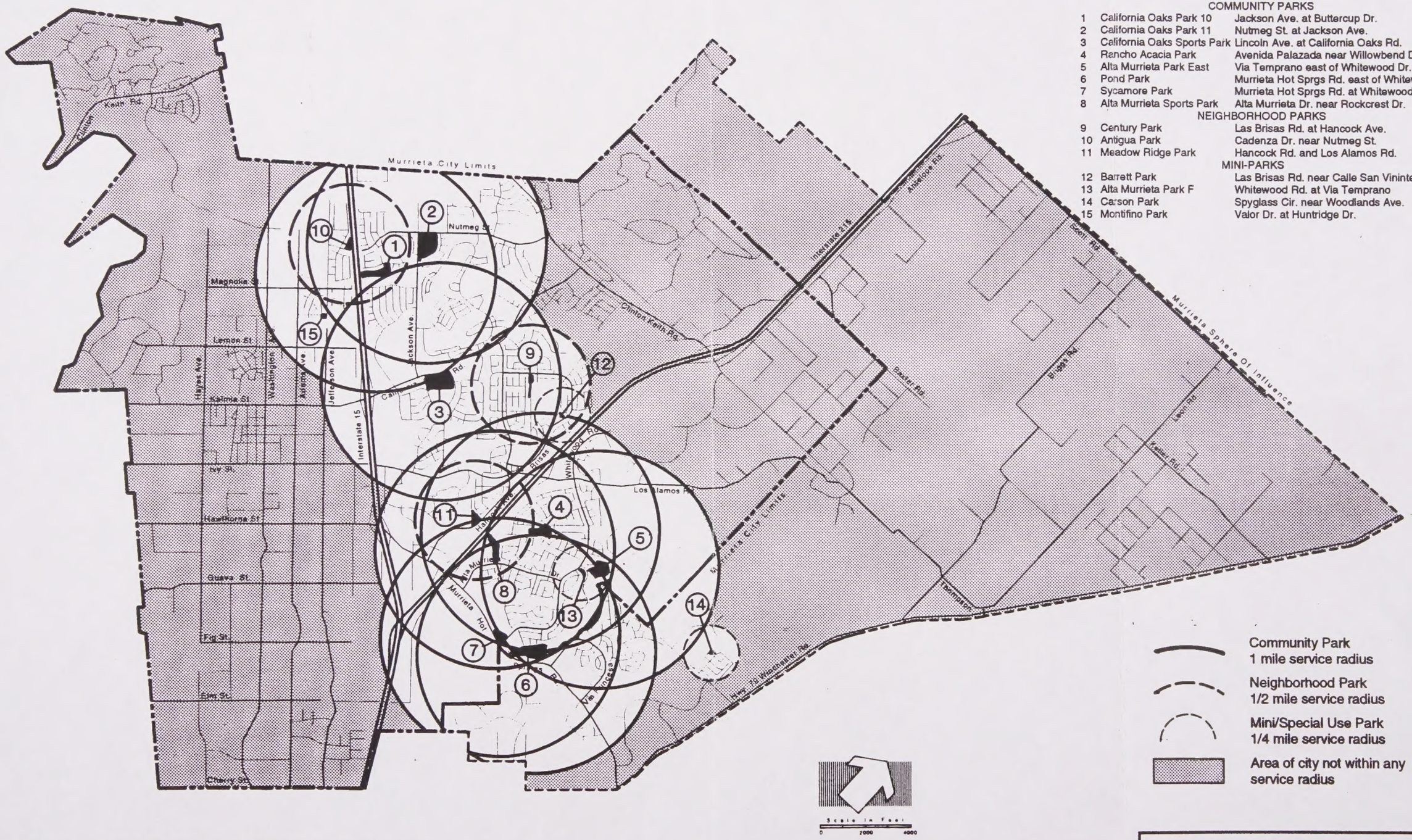
Park Facilities Inventory

Park	Facility																		
	Acreage	Open Grass Areas	Ball Fields	Mature Stand of Trees	Tennis Courts	Tot Lot	Barbeque/Picnic facilities	Volleyball Courts	Basketball Courts	Lighted Ball Fields	Soccer Field	Pool	Bike Paths	Par Course	Benches/View Areas	Pond/Fishing	Restrooms	Concession areas	Football Field
Community																			
California Oaks Park 10	10.0	•	•																
California Oaks Park 11	20.0	•		•															
California Oaks Sports Park	22.0		•		•	•	•	•	•	•	•	•					•		
Rancho Acacia Park	10.0	•	•				•							•					
Alta Murrieta Park Easr	10.0	•		•			•								•				
Pond Park	15.2	•					•									•			
Sycamore Park	4.5																		
Alta Murrieta Sports Park	14.0					•	•			•							•	•	•
Total	105.7																		
Neighborhood																			
Century Park	3.5					•	•						•						
Antigua Park	5.0	•				•													
Meadow Ridge Park	4.25	•				•	•												
Total	12.75																		
Mini-Park																			
Barrett Park	1.3					•							•						
Alta Murrieta Park F	2.0	•					•												
Carson Park	1.0	•																	
Montifino Park	3.0	•				•									•				
Total	7.3																		
Total Park Acreage	125.75																		

Source: CSA 143

Park Facilities Inventory

TABLE 3.8-5



LEGEND

	COMMUNITY PARKS	
1	California Oaks Park 10	Jackson Ave. at Buttercup Dr.
2	California Oaks Park 11	Nutmeg St. at Jackson Ave.
3	California Oaks Sports Park	Lincoln Ave. at California Oaks Rd.
4	Rancho Acacia Park	Avenida Palazada near Willowbend Dr.
5	Alta Murrieta Park East	Via Temprano east of Whitewood Dr.
6	Pond Park	Murrieta Hot Sprgs Rd. east of Whitewood Dr.
7	Sycamore Park	Murrieta Hot Sprgs Rd. at Whitewood Dr.
8	Alta Murrieta Sports Park	Alta Murrieta Dr. near Rockcrest Dr.
	NEIGHBORHOOD PARKS	
9	Century Park	Las Brisas Rd. at Hancock Ave.
10	Antigua Park	Cadenza Dr. near Nutmeg St.
11	Meadow Ridge Park	Hancock Rd. and Los Alamos Rd.
	MINI-PARKS	
12	Barrett Park	Las Brisas Rd. near Calle San Vininte
13	Alta Murrieta Park F	Whitewood Rd. at Via Temprano
14	Carson Park	Spyglass Cir. near Woodlands Ave.
15	Montifino Park	Valor Dr. at Huntridge Dr.

Source: The Lightfoot Planning Group and CSA 143

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Park Locations and Service Areas

FIGURE 3.8-3

Other Sites Offering Recreational Programs by CSA

Facility	Address
Alta Murrieta	39475 Whitewood Road
E. Hale Curran School	40855 Chaco Canyon Road
Foxbriar Farms	37635 Mesa Road
Murrieta Town Hall, Community Room	26442 Beckman Court
Murrieta Elementary School	24725 Adams
Murrieta Fire Station #1	41825 Juniper
Murrieta Tennis Club	40485 Murrieta Hot Springs Rd
Murrieta Valley High School	24105 Washington Avenue
Rail Ranch School	25030 Via Santee
Rancho California Golf Course	38275 Murrieta Hot Springs Rd
Temecula Senior Center	40250 Winchester
Tumble Jungle	41680 Enterprise Circle South

Other Organizations

A number of other organizations operate recreational programs, events and activities within Murrieta. Murrieta Valley Pop Warner football, Murrieta Valley Little League, Murrieta Valley Soccer Association and the Murrieta Valley Yanks semi-pro baseball team offer programs for youths and adults. Local churches and schools may offer events or activities. Private recreational opportunities include golf, bowling and dance.

Regional Recreation Facilities

The County of Riverside parks are operated and maintained by the County of Riverside Parks Department. County parks total approximately 6,414 acres of developed parks and approximately 660 acres of undeveloped parkland. In addition, the county maintains Lake Skinner Park located approximately 12 miles northeast of Murrieta off of Warren Road. This facility is a 6,440 acre recreation area with facilities for camping, fishing, boating, picnicking, hiking and equestrian trails.

Other Recreational Facilities in Murrieta Vicinity

Facility	Description
Lake Elsinore Park	Located west of Sun City, this is an 87-acre recreation
Santa Rosa Plateau	Located west of Murrieta, it is an approximately 3,000-
Sam Hicks Monument Park	7-acre historic park
Red Hawk Golf Course	Public golf course
Lake Skinner Regional Park	Facilities for camping, fishing, boating, hiking
Vail Lake	A privately owned recreation area that offers boating,
Bear Creek Country Club	A golf course located in Murrieta in the Red Hawk
Colony Golf Course	A public course located in California Oaks.
Temecula Creek Golf Course	A public golf course and resort located in rainbow
Murrieta Hot Springs Resort	A well known health resort located on Murrieta hot

Standards and Legal Requirements

Parkland Hierarchy

Parkland may be identified according to the level of service for which it is intended to provide. Typical parkland classifications include Community Parks, Neighborhood Parks, and Mini-Parks. The parkland inventory on Table 3.8-5 utilizes this hierarchy for Murrieta parks.

Community Parks may vary considerably in size, but NRPA suggests 25 acres or more as desirable. These parks accommodate community-wide activities so may feature swimming pools, large game fields, night lighting, community buildings, and sizable areas for picnicking and passive uses. Community parks may also encompass natural features such as rivers or lakes or cultural resources such as historic sites and structures. This park type requires service by transportation routes and adequate parking.

Neighborhood Parks are generally one acre or larger. Neighborhood parks are geographically located to be easily and safely accessible to a particular neighborhood by bicycle or walking. These parks tend to be general use parks, often park-school facilities, that serve active recreational needs. Neighborhood parks may feature game fields, courts, playground areas, wading pools, picnic facilities, and passive lawn areas.

Mini Parks are typically the smallest of parks in size, usually less than acre. It is found within neighborhoods or in close proximity to high density housing. This park type is often intended to serve a particular localized characteristic or need, such as a special age group. Urban pocket parks could be included in this category. Mini-parks lend themselves best to passive uses and may feature such park amenities as attractive landscaping, seating, small play areas, multi-purpose courts, and quiet game areas.

National Parkland Standards

The National Recreation and Park Association (NRPA) recommends a standards and classification system for local parks. The recommended system utilizes the parkland hierarchy to determine physical service areas and parkland acreages that are adequate for serving the anticipated use.

National Recreation and Park Association (NRPA) Recommended Standards and Classification System for Local Parks is shown below.

Classification	Service Area Radii	Distribution (per 1,000 population)
Community Park	1 to 2 mi	5.0 to 8.0 acres
Neighborhood Park	1/2 mile	1.0 to 2.0 acres
Mini-Park	1/4 mile	.25 to 1.0 acres

Figure 3.8-3 shows the location of existing parks in the Study Area, and their NRPA recommended service areas. The NRPA further suggests that a park system provide a total of 6.25 to 10.25 acres per 1,000 population.

County Parkland Standards

The County of Riverside and CSA 143 uses the following Location Criteria for Local Parks:

Park Type	Service Area Radius	Population Survey
Community	.50 to 3.0 Miles	10,000-25,000
Neighborhood (includes mini-park)	.25 to 3/8 Miles	2,000-5,000

The Local Park Code requirement per CSA 143 is 4.0 acres per 1,000 population.

Parkland Dedication and Use Programs

The Quimby Act (Section 66477, Subdivision Map Act) authorizes cities to require by ordinance the dedication of local park acreage, the payment of fees, or some combination of both for park and recreational purposes. The dedication of up to 3 acres per 1,000 persons residing in the subdivision is allowed. If the

existing neighborhood and community park area exceeds that limit, a higher standard may be adopted, not to exceed 5 acres per 1,000 residents of the subdivision. In order to place this condition of approval on a map, a general plan or specific plan must be in place that contains the policies and standards for park and recreation facilities.

The County of Riverside Ordinance 460 Section 10.35 established dedication and fee requirements for new development. CSA complies with provisions of this ordinance and uses the following formulas to determine park dedications and payment of in-lieu fees.

The amount of land dedicated as parkland is based upon the population generated by the subdivision and computed on the basis of four (4) acres of parkland per 1,000 people.

Amount of Parkland to be Dedicated = DUs x Population Density x Park Ratio

Where:
DUs = Number of dwelling units
Population Density = Population per dwelling unit as set forth below.
Park Ratio = 4.0 acres per 1,000 persons.

Population density is determined as follows:

Single-family dwelling unit (detached garage) = 2.98 persons per dwelling unit.

Single-family dwelling unit (attached garage) = 2.59 persons per dwelling unit.

Two dwelling units per structure = 2.64 persons per dwelling unit

Three of four dwelling units per structure = 2.48 persons per dwelling unit.

Five or more dwelling units per structure: 2.34 persons per dwelling unit.

Mobilehomes: 2.72 persons per dwelling unit

Where there is payment of fees in lieu of land dedication, the amount of such fee shall be based upon the fair market value of the amount of land which would otherwise be required for dedication. The fee shall be determined by the following formula:

In Lieu Fee = Number of Acres x Fair Market Value
Where:
Number of Acres = Acreage of parkland to be dedicated as determined above.

Fair Market Value = Fair market value per acre of the property to be subdivided based upon the land as an improved subdivision, not as raw acreage. Fair market value shall be based on the following procedure:

The County, the CSA, and the subdivider may agree to the fair market value; or,

If agreement cannot be reached, the subdivider may, at his own expense, obtain appraisal of the property by a qualified real estate appraiser, which appraisal may be accepted by the county and the district if found to be reasonable; or.

The fair market value (per acre) shall be determined by a current appraisal of the land subdivision by the Office of the County Assessor which appraisal shall be final unless modified by the Board of Supervisors of Riverside County.

Trails

Although an official community-wide trails system does not exist at this time, a number of historic trail routes have traversed the Murrieta Plan Area, including the Native American Indian Trail, Sonoran Trail, and the Emigrant Trail. Residents participating in General Plan community workshops expressed their desire to have a trail system implemented. Figure 3.8-4 shows some of the potential roadway, waterway, and Greenway trail locations recommended for consideration in the Murrieta General Plan Conservation/Open Space Element Technical Report. There are a number of informal, local trails and several regional trail systems propose routes through the Plan Area. The following programs and studies focus on designated and proposed trails within the study area.

C.S.A. 143 dedicated and planned trails and bicycle lanes

Murrieta Greenways mapping of existing and proposed local trails

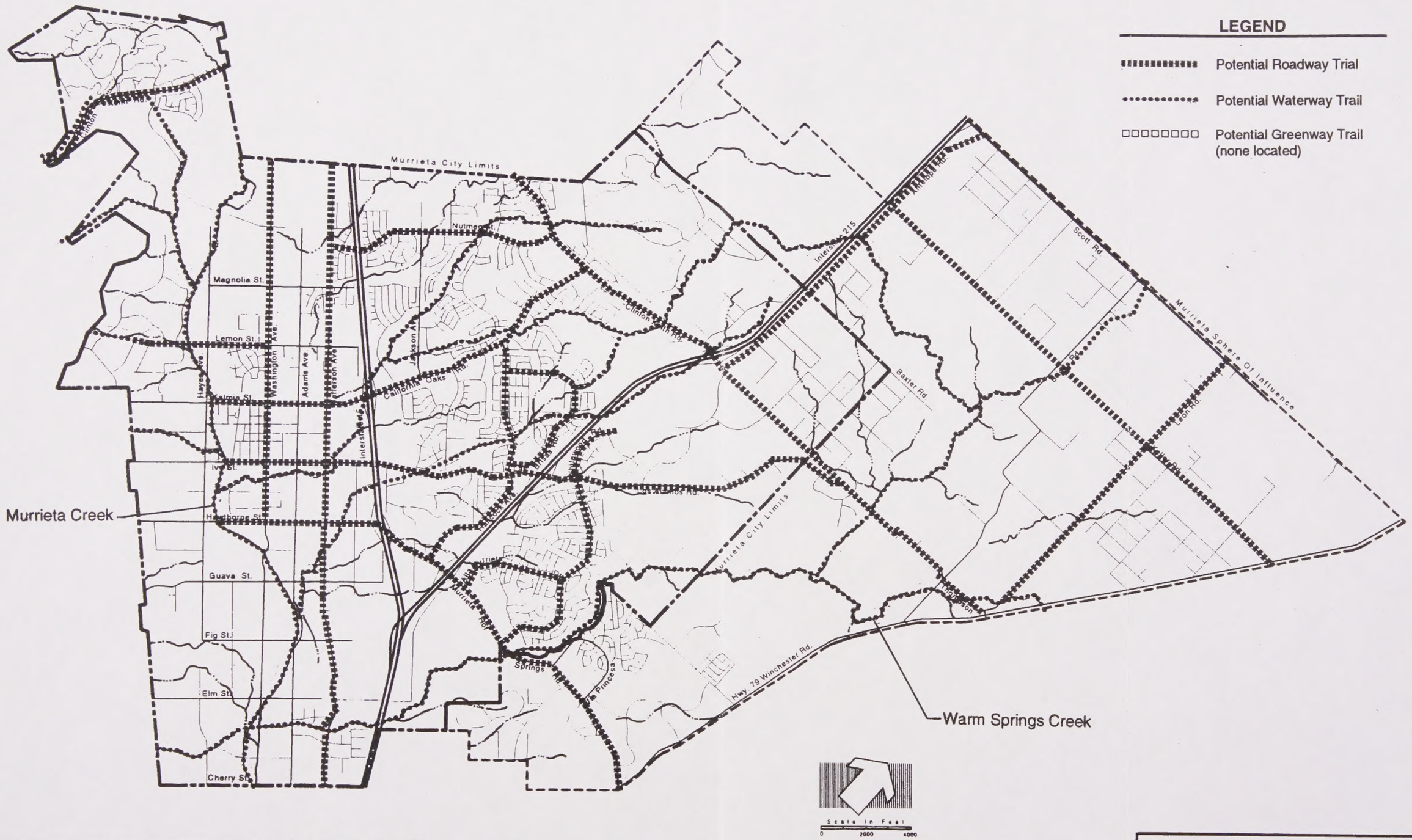
County of Riverside Equestrian, Hiking, and Bicycle Trails Program

SWAP Recreational Trails and Bike Paths

Eastern Municipal Water District Multi-purpose Corridor Study

Regional Recreational Trail System recommended by study of Management Alternatives for the Upper Santa Margarita River Watershed Study

Ivy Street Recharge Study (proposed multi-purpose corridor)



Source: The Lightfoot Planning Group

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Potential Trails Map

FIGURE 3.8-4

City of Temecula Parks and Recreation Master Plan and Proposed Master Plan of Recreation Trails

Studies for Proposed Eastside Reservoir (Domenigoni Valley)
(proposed recreation areas and trail system)

Trails provide for pedestrian, hiking, bicycle, and equestrian needs. They can be designed as multi-purpose corridors that integrate trail systems with creeks and other water and drainage facilities, utility lines, landscape greenbelts, wildlife corridors/habitats, and other compatible uses.

ENDNOTES

1. Jerry Allen, Administrative Battalion Chief, Murrieta Fire Protection District, personal communication, September 15, 1992.

2. Murrieta Fire Protection District Fire Protection Plan, prepared for the Murrieta Fire Protection District by Christensen Wallace Inc., March 9, 1992.

TRANSPORTATION / CIRCULATION

SECTION 3-9

3.9 TRANSPORTATION/CIRCULATION

INTRODUCTION

This report presents documentation of the existing roadway system conditions within the City of Murrieta and its sphere of influence. The report summarizes existing roadway features, daily traffic volumes, daily roadway capacity utilization and circulation system plans/studies. Current traffic count data sheets and supplemental count source references are included in the report to provide an organized compilation of count information.

Regional access to the study area is provided primarily by Interstate 15 and Interstate 215 which traverse through the western and central portion of the study area, respectively. Another important regional roadway facility is State Route 79 (Winchester Road) along the eastern border of the study area.

EXISTING TRAFFIC CONDITIONS

The existing network of regional and local roadways as well as traffic conditions (i.e. intersection controls, daily traffic volumes and level of service) as they currently exist are described and illustrated in this section of the report.

Regional Facilities

There are three freeway corridors which traverse the study area and provide regional access:

Interstate 15

Interstate 15 traverses in a generally north/south direction, diagonally through the western portion of the study area. To the north, I-15 continues through Riverside and San Bernardino counties and is the link to the I-10 and State Routes 91 and 60, and the greater Los Angeles area. In the study area, daily traffic volumes range from approximately 54,000 vehicles per day to 86,000 vehicles per day.

Interstate 215

Interstate 215 traverses in a north/south direction through the central portion of the study area. To the north, I-215 continues through Riverside County and connects at its northerly terminus with State Route 60 in the Moreno Valley. In the study area, daily traffic volumes range from approximately 36,000 vehicles per day to 39,000 vehicles per day.

State Route 79 (Winchester Road)

State Route 79 runs in a northeasterly direction from the interchange at the I-15 through the eastern portion of the study area toward the city of Hemet. State Route 79 generally provides a parallel north/south route to the I-215 east of the freeway. Existing daily traffic volumes range from approximately 9,900 vehicles per day to 11,400 vehicles per day.

Key Arterials, Collector Streets

Clinton Keith Road

Clinton Keith Road is an east/west roadway which runs through the middle of the study area. The roadway provides access to both the I-15 and I-215 at interchanges but is discontinuous east of the I-215. The roadway is currently 2 to 4 lanes undivided and carries traffic volumes ranging from approximately 2,300 vehicles per day west of Calle Del Oso Oro to 5,600 vehicles per day west of the I-215.

Scott Road

Scott Road is an east/west road along the northern border of the study area which runs westerly from Winchester Road and provides access to the I-215. West of the I-215, Scott Road transitions to Bundy Canyon Road which provides access to the I-15 with an interchange. The existing roadway cross-section is 2 lanes undivided and exists as a dirt roadway in the vicinity of Winchester Road. Existing traffic volumes range from approximately 1,000 vehicles per day west of Winchester Road to 4,300 vehicles per day east of the I-215.

Washington Avenue

This north/south roadway runs parallel to the I-15 through the city of Murrieta and becomes Palomar Street to the north. The existing roadway is 2 lanes undivided in the study area. Existing traffic volumes range from approximately 400 vehicles per day at the south end to 5,600 vehicles per day south of Kalmia Street.

California Oaks Road

This north/south roadway runs southerly from Clinton Keith Road to the I-15 where it provides freeway access at an interchange. The existing roadway cross-section is 4 lanes divided north of the I-15 and 2 lanes undivided south of the I-15 where it becomes known as Kalmia Street. Existing traffic volumes range from approximately 3,800 vehicles per day south of Clinton Keith Road to 17,400 vehicles per day north of the I-15.

Los Alamos Road

Los Alamos Road runs diagonally northeast across the study area providing freeway access to the I-215 at an interchange. South of the I-15, this 2 lane undivided roadway becomes known as Ivy Street, and at its north end, transitions to Thompson Road. Existing traffic volumes range from approximately 1,200 vehicles per day north of Whitewood Road to 17,900 vehicles per day south of the I-215. South of the I-15, volumes decline to approximately 5,200 vehicles per day.

Murrieta Hot Springs Road

This east/west roadway crosses both the I-15 and the I-215 just north of the freeway confluence, and provides access to both freeways with interchanges. West of the I-15 the roadway becomes known as Hawthorn Street. The roadway currently exists as 2 lanes undivided along most of its length. Existing traffic volumes range from approximately 6,400 vehicles per day west of the I-15 to 10,900 vehicles per day between the I-15 and I-215.

Jefferson Avenue

This north/south roadway runs parallel to the I-15. The existing roadway is 2 lanes undivided and existing traffic volumes range from approximately 1,000 vehicles per day at the north end to 12,000 vehicles per day at the south end.

Nutmeg Street

This east/west roadway runs westerly from Clinton Keith Road to the I-15. The existing roadway cross-section is 2 lanes undivided. Existing traffic volumes range from approximately 1,200 vehicles per day west of Clinton Keith Road to 3,000 vehicles per day east of Jackson Avenue.

Jackson Avenue

This north/south roadway runs parallel to the I-15. The existing roadway is 4 lanes north of California Oaks Road to 2 lanes undivided in the vicinity of Nutmeg Street. Existing traffic volumes range from approximately 2,600 vehicles per day north of Nutmeg Street to 4,500 vehicles per day north of California Oaks Road.

Antelope Road

This north/south frontage roadway runs parallel to the I-215. It is 2 lanes undivided north of Clinton Keith Road. Existing traffic volumes range from approximately 700 vehicles per day north of Clinton Keith Road.

TRAVEL LANES AND INTERSECTION CONTROLS

Figure 3.9-1 identifies the existing number of through travel lanes for roadways within the study area. The existing intersection controls are shown on Figure 3.9-2. The intersection controls shown in Figure 3.9-3 reflect conditions that correspond to the peak hour counts that have been compiled from various sources. Peak hour counts have been taken between 1990 and 1992.

DAILY TRAFFIC VOLUMES AND CONDITIONS

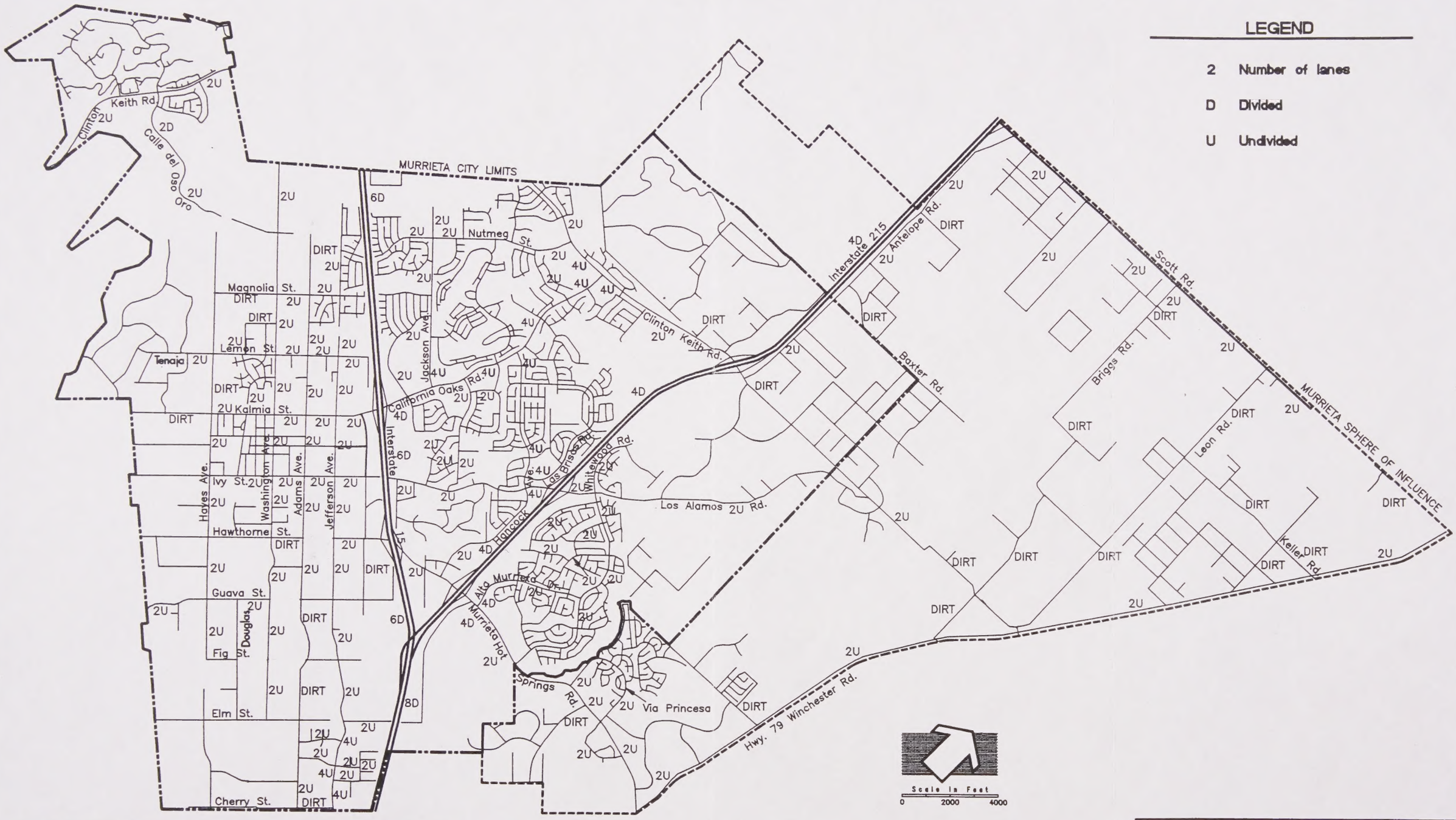
Figure 3.9-3 shows the existing average daily traffic (ADT) volumes recorded for Robert Kahn, John Kain & Associates, Inc. at selected locations throughout the study area (see Appendix "A"). Additional supplemental counts were provided by Caltrans, city of Murrieta and Riverside County.

Daily volume to capacity ratios for existing roadways have been determined for locations where daily traffic volumes are available. A volume to capacity ratio greater than 1.0 would indicate that the traffic volume exceeds the ultimate capacity of the roadway. A volume to capacity ratio greater than .8 (i.e. .81, .85, .9, etc), while within the ultimate capacity of the roadway, would exceed the level of service (LOS) C design capacity of the road (level of service C is generally considered the acceptable operating standard for rural street systems.). Figure 3.9-4 shows the daily volume to capacity ratios for the study area.

Intersection Service Levels

Congestion is the result of a street network that carries traffic volumes in excess of the network's design capacity. Level of Service (LOS) is a term used to qualitatively describe prevailing conditions and their effect on traffic. LOS A through C represent good, relatively unrestricted traffic flow conditions. LOS D typically is the level for which a metropolitan area street system is designed. LOS E represents volumes at or near the capacity of the highway which will result in possible delays of momentary duration and fairly unstable flow. LOS F occurs when a facility is overloaded and is characterized by stop-and-go traffic with delays of long duration. The Riverside County Transportation Commission (RCTC) requires that the 1985 Highway Capacity Manual (HCM) (Operational Analysis Method - Section 9) be used to analyze the level of service to be achieved at intersections. The saturation flow rate for intersections (also known as lane capacity) is 1700 vehicles per hour of green time per lane for turning movements, and 1800 vehicles per hour of green time per lane for through movements for intersections with left turn phasing and no shared lane geometrics. Lost time (also known as "clearance interval") is assumed to be two seconds. Adjustment factors for such things as lane width, trucks, grade, obstructions, parking or pedestrians, are as stated in the 1985 HCM.

The 1985 Highway Capacity Manual (HCM) methodology expresses the level of service at an intersection in terms of time delay and reserve capacity for the various intersection approaches. The HCM uses different procedures depending on whether the intersection is signalized or unsignalized. The levels of service determined in this study are determined using the HCM methodology.

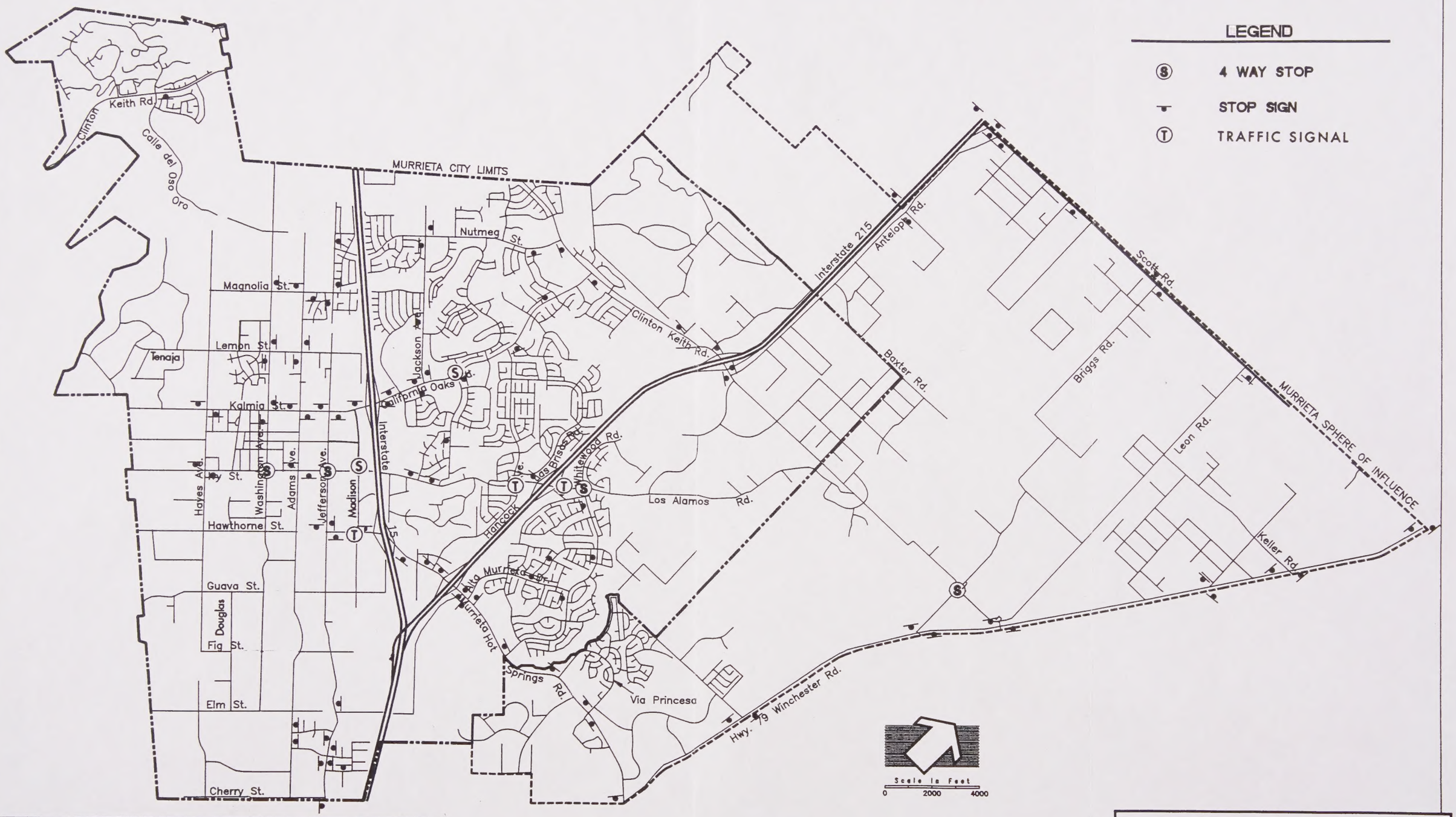


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing Number of Through Lanes

FIGURE 3.9-1

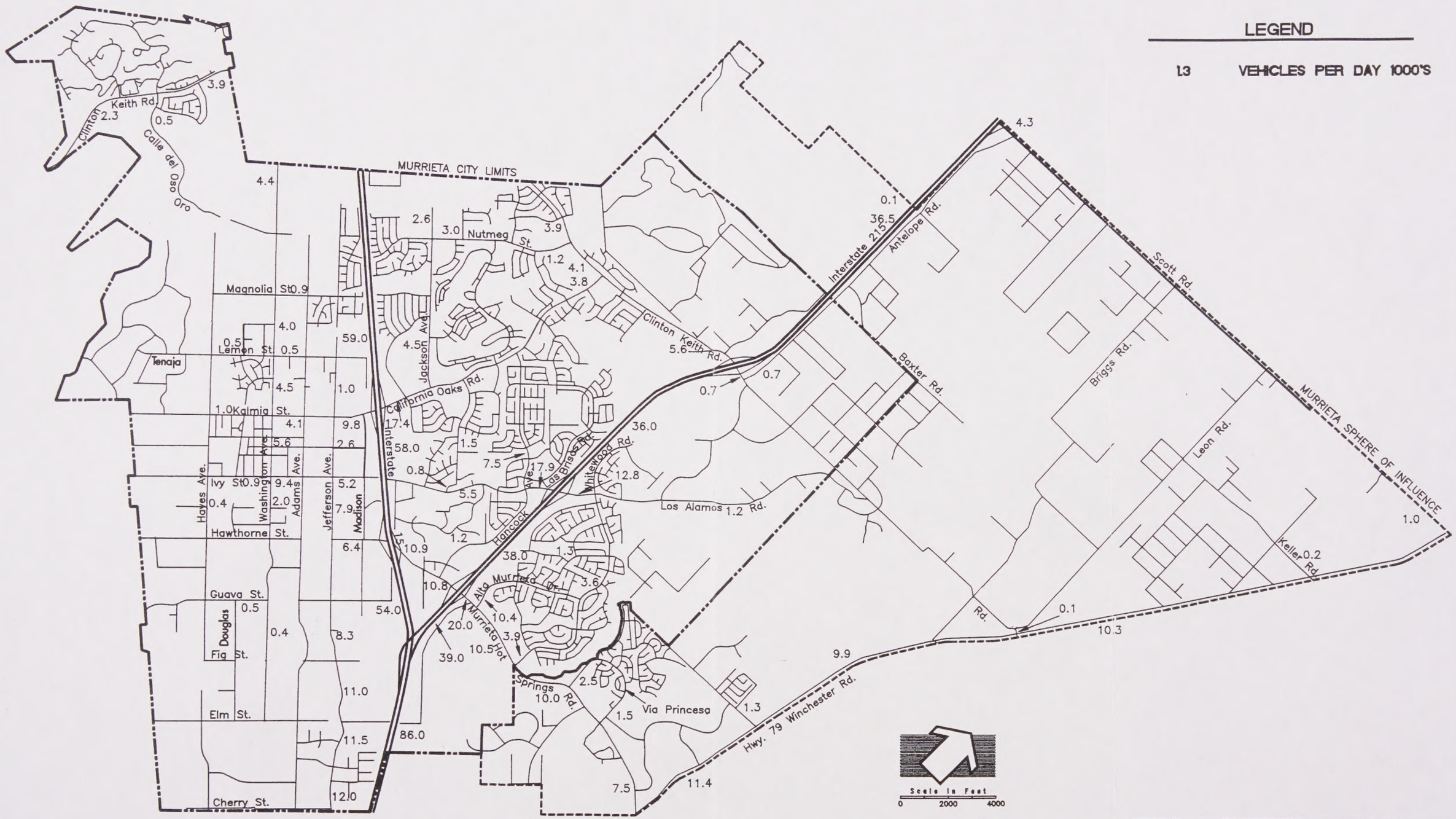


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing Intersection Controls

FIGURE 3.9-2

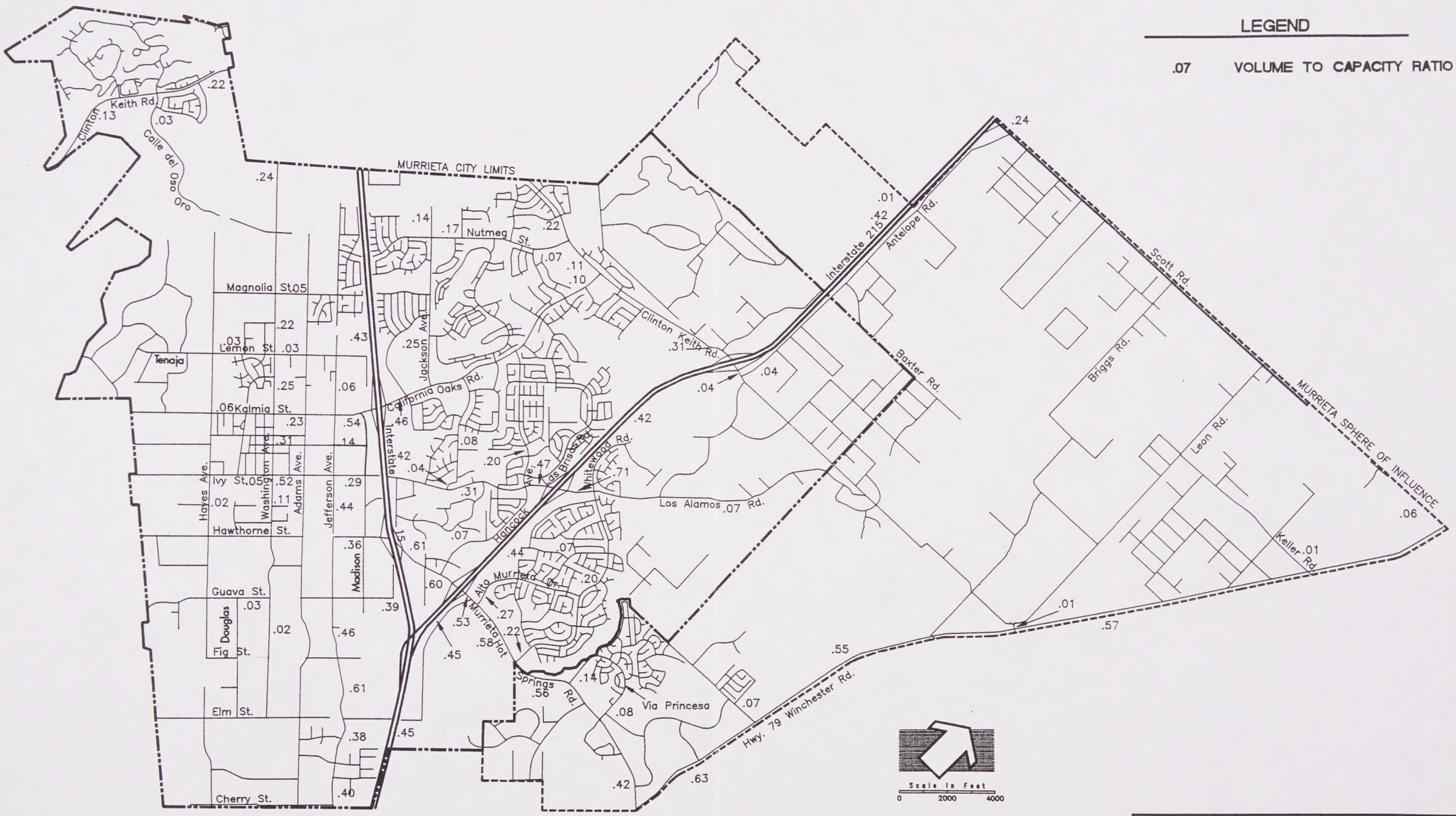


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing Average Daily Traffic (ADT)

FIGURE 3.9-3



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing Daily Volume to Capacity Ratios

FIGURE 3.9-4

* - Fwy ramp

TABLE 3.9-1
CAPACITY VALVES

Road Segment	Classification	Roadway Capacity	Actual ADT	V/C/Ratios	LOS
Los Alamos Rd. to Auld Rd.	Multi-Modal Transportation Corridor	80,000	69,000	.87 w/o	D
HAWTHORNE ST.					
Washington to Adams	Major	38,000	32,000	.83	D
*Madison Ave. to I-15	Augmented Urban Arterial	72,000	63,000	.87	D
MURRIETA HOT SPRINGS RD.					
*I-15 to Hancock Ave.	Augmented Urban Arterial	72,000	60,000	.83	D
*Hancock Ave. to I-215	Augmented Urban Arterial	72,000	67,000	.91	E
*I-215 to Alta Murrieta Dr.	Urban Arterial	59,000	66,000	1.11	F
Alta Murrieta Dr. to Whitewood Rd.	Urban Arterial	59,000	48.000	.81	D
ALTA MURRIETA DR.					
Murrieta Hot Springs Rd to Whitewood Rd.	Major	38,000	32,000	.83	D
ELM ST.					
Jefferson to Madison	Major	38,000	44,000	1.16	F
DE LUZ RD.					
Western City Limit to Washington Ave.	Major	38,000	32,000	.84	D
DE LUZ RD.					
Western City Limit to Washington Ave.	Major	38,000	32,000	.84	D
DATE STREET					
*Madison to I-15	Augmented Urban Arterial	72,000	59,000	.82	D

* - Fwy ramp

TABLE 3.9-1
CAPACITY VALVES

Road Segment	Classification	Roadway Capacity	Actual ADT	V/C/Ratios	LOS
*I-15 to Ynez Rd.	Augmented Urban Arterial	72,000	69,000	.95	E
LOS ALAMITOS RD.					
Linnel Ext. to Golden Cities Rd.	Arterial	38,000	36,000	.93	E
AULD RD.					
Clinton Keith Rd. to Winchester	Major	38,000	33,000	.86	D
WINCHESTER RD.					
Date st. to Rancho Club Dr.	Multi-Modal Transportation Corridor	80,000	88,000	1.10	F
Rancho Club Dr. to Hunter Rd.	Multi-Modal Transportation Corridor	80,000	80,000	1.00	E
Hunter Rd. to Unnamed	Multi-Modal Transportation Corridor	80,000	86,000	1.08	F
Unnamed to Auld Rd.	Multi-Modal Transportation Corridor	80,000	79,000	.99	E
Auld Rd. to Clinton Keith Rd.	Multi-Modal Transportation Corridor	80,000	65,000	.81	D
Clinton Keith Rd. to Baxter Rd.	Multi-Modal Transportation Corridor	80,000	77,000	.97	E
Baxter Rd. to Unnamed	Multi-Modal Transportation Corridor	80,000	77,000	.96	E
Unnamed to Leon Rd.	Multi-Modal Transportation Corridor	80,000	75,000	.94	E
Leon Rd. to Unnamed	Multi-Modal Transportation Corridor	80,000	65,000	.81	D

* - Fwy ramp

TABLE 3.9-1
CAPACITY VALVES

Road Segment	Classification	Roadway Capacity	Actual ADT	V/C/Ratios	LOS
BAXTER RD.					
Zeiders Rd. to I-215	Urban Arterial	59,000	48,000	.82	D
Antelope Rd. to I-215	Urban Arterial	59,000	57,000	.96	E
Baxter Rd.					
Zelders Rd. to I-215	Urban Arterial	59,000	48,000	.82	D
LEON RD.					
Golden Cities Rd. to Winchester	Major	38,000	33,000	.88	D

TABLE 3.9-2
INTERSECTIONS REQUIRING CAPITAL ENHANCEMENT

1. Washington Ave./Unnamed
2. Jefferson/Nutmeg
3. Jackson/Nutmeg
4. Falconer Dr./Nutmeg
5. Clinton Keith Rd./Nutmeg
6. Zeiders Rd./Baxter Rd.
7. Kalmia St./Madison Ave.
8. Kalmia St./I-15 Fwy
9. I-15/California Oaks Rd.
10. Tula Rosa Rd./California Oaks Rd.
11. Jackson Ave./California Oaks Rd.
12. Clinton Keith Rd./California Oaks Rd.
13. Clinton Keith Rd./Zeiders Rd.
14. Clinton Keith Rd. (W)/I-215
15. Baxter Rd. (W)/I-215 Fwy
16. Scott Rd. (W)/I-215 Fwy
17. Ivy St./Monroe Ave.
18. Ivy St./Hancock Ave.
19. Ivy St./I-215 Fwy
20. I-215 Fwy/Los Alamos Rd.
21. Los Alamos Rd./Clinton Keith Rd.
22. I-215 Fwy/Clinton Keith Rd. (E)
23. Clinton Keith Rd./Antelope Rd.
24. I-215 Fwy/Baxter Rd. (E)
25. I-215 Fwy/Scott Rd. (E)
26. Scott Rd./Antelope Rd.
27. Clinton Keith Rd./Auld Rd.
28. Clinton Keith Rd./Winchester Rd.
29. Winchester Rd./Baxter Rd.
30. Winchester Rd./Unnamed
31. Winchester Rd./Leon Rd.
32. Hawthorne St./Madison Ave.
33. Hawthorne St. (S)/I-15 Fwy
34. I-15 Fwy/Murrieta Hot Springs Rd. (E)
35. Murrieta Hot Springs Rd./Monroe Ave.
36. Murrieta Hot Springs Rd./Hancock Ave.
37. Murrieta Hot Springs Rd. (W)/I-215 Fwy
38. I-215 Fwy/Murrieta Hot Springs Rd. (E)
39. Murrieta Hot Springs Rd./Alta Murrieta Dr.
40. Hancock Ave./Prop. I-215 Overpass
41. Hancock Ave./Alta Muirrieta Dr.
42. Date St./Jefferson Ave.
43. Date St./Madison Ave.
44. Date St. (W)/I-215 Fwy
45. I-215 Fwy/Date St. (E)
46. Elm St./Ynez Rd.
47. Elm St./Murrieta Hot Springs Rd.
48. Date St./Murrieta Hot Springs Rd.
49. Murrieta Hot Springs Rd./Winchester
50. Date St./Wnchester
51. Rancho Club Dr./Winchester
52. Hunter Rd./Winchester
53. Hunter Rd./Unnamed
54. Unnamed/Auld Rd.

All study intersections, which are two-way stop sign controlled with stop control on the minor street only, have been analyzed using the unsignalized intersection methodology of the HCM. For these intersections, the calculation of level of service is dependent on the occurrence of gaps occurring in the traffic flow of the main street. Using various information on the intersection configuration, the level of service can be calculated directly using the unsignalized methodology as shown in Figure III-6 of the Murrieta General Plan Technical Report.

Because some of the study area intersections are multi-way stop controlled, the ability of vehicles to enter the intersection is not controlled by the occurrence of gaps in the flow of the main street. All way stop controlled (AWSC) intersections have been evaluated using the Transportation Research Circular Number 373, July, 1991. The analysis for these intersections are also shown in Figure III-6 of the Murrieta General Plan Technical Reports.

Intersection level of service calculations are based upon manual AM and PM peak hour turning movement counts that were recorded for Robert Kahn, John Kain & Associates, Inc. HCM and AWSC calculation worksheets are provided in Appendix "B" of the Murrieta General Plan Technical Reports. AM and PM intersection levels of service are shown on Figure 3.9-5.

CIRCULATION PLANS/STUDIES

Riverside County General Plan Circulation Element

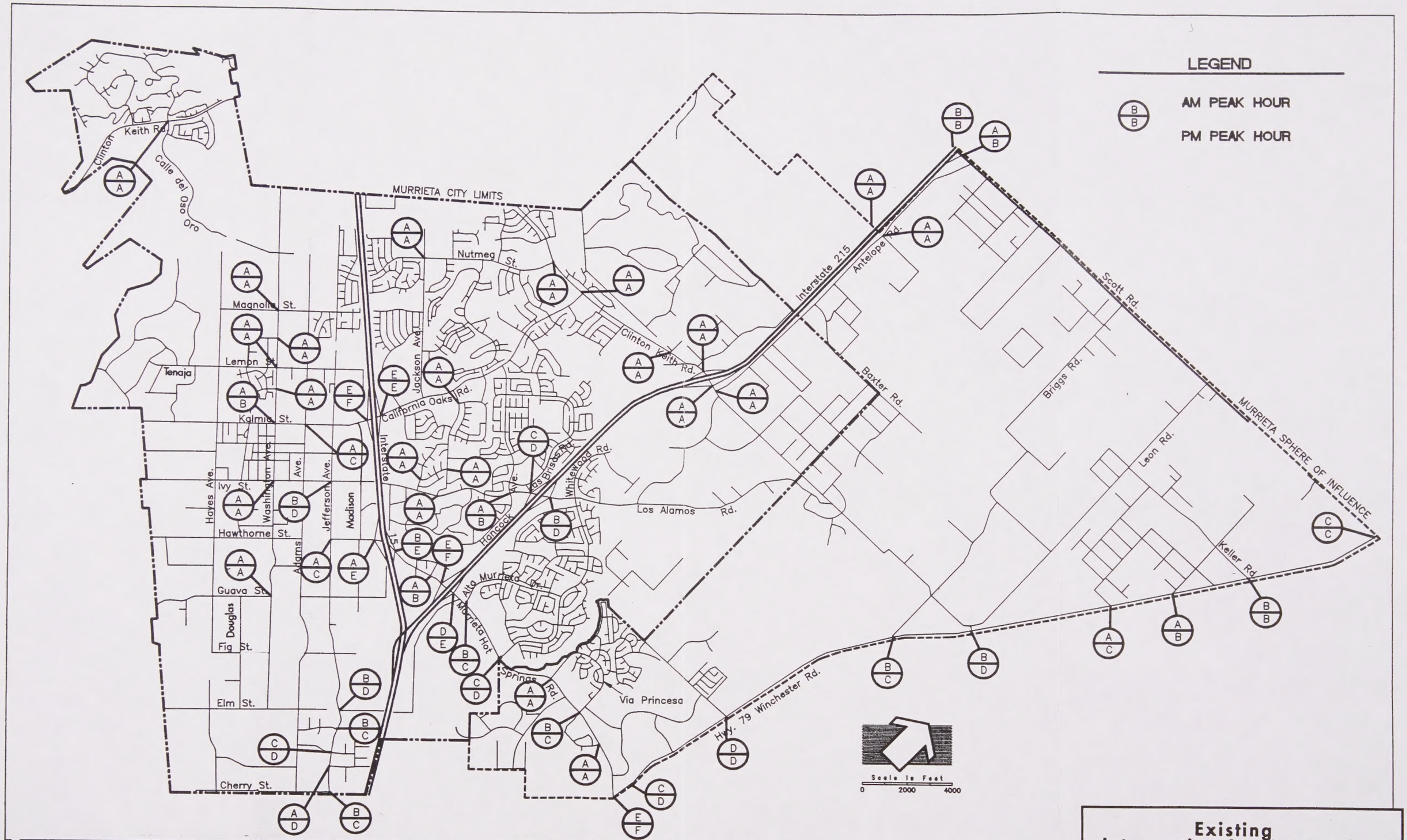
A circulation system hierarchy of roadways is essential in providing a balanced linkage between high volume traffic corridors (i.e. major arterials) and low volume streets. Figure 3.9-6 shows the current County of Riverside General Plan Circulation Element roadway classifications for existing and future roadways in the study area. Figure 3.9-7 illustrates the Riverside County arterial street cross-sections. The functions of the circulation system's street categories are summarized as follows:

Local Streets - Local streets principally provide vehicular, pedestrian, and bicycle access to property abutting the public right-of-way with movement of traffic acting only as a secondary function.

Collector Streets - Collector streets are intended to serve as the intermediate route to handle traffic between local streets and arterials. In addition, collector streets provide access to abutting property.

Major and Secondary Arterials - Major and Secondary Arterials function to connect traffic from collectors to the major freeway system. They move large volumes of automobiles, trucks and buses, and link the principle elements within the city to other adjacent regions.

Freeways - Freeways are controlled access, high speed roadways with grade separated interchanges intended to expedite movement between distant areas in a metropolitan community or region.



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing Intersection Service Levels

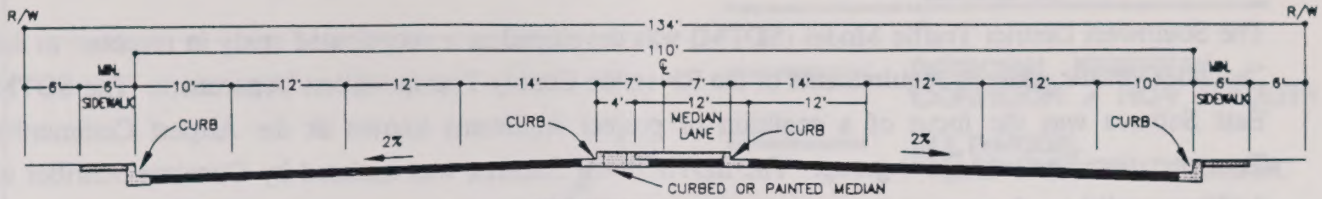
FIGURE 3.9-5

CITY OF MURRIETA

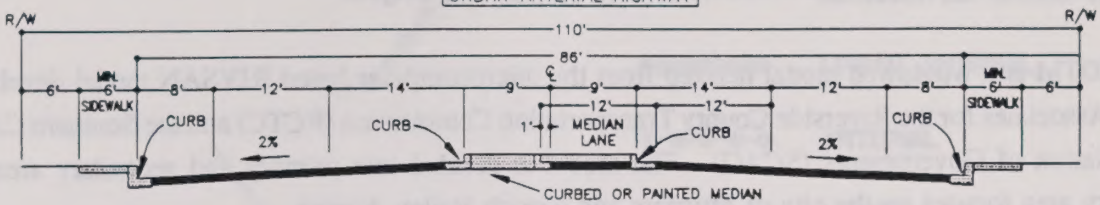
MASTER ENVIRONMENTAL ASSESSMENT

RIVERSIDE COUNTY GENERAL PLAN CIRCULATION ELEMENT

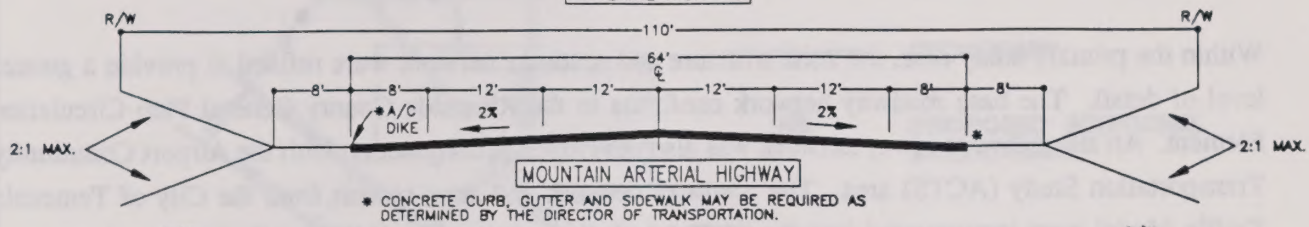
FIGURE 3.9-6



URBAN ARTERIAL HIGHWAY

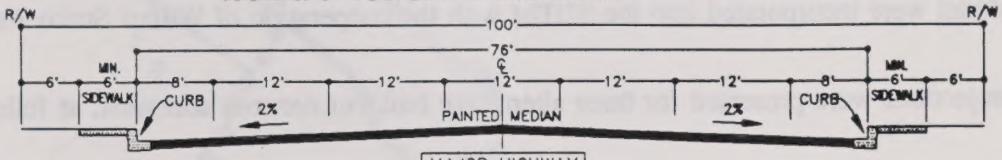


ARTERIAL HIGHWAY

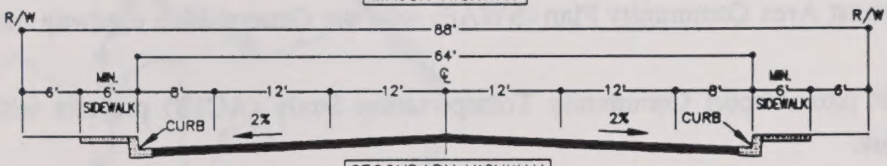


MOUNTAIN ARTERIAL HIGHWAY

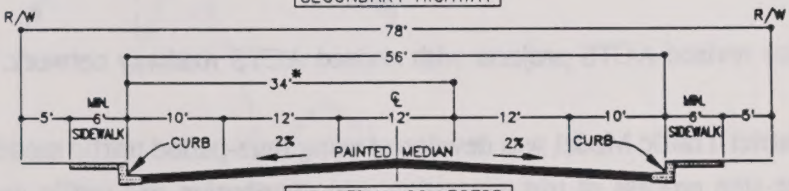
* CONCRETE CURB, GUTTER AND SIDEWALK MAY BE REQUIRED AS DETERMINED BY THE DIRECTOR OF TRANSPORTATION.



MAJOR HIGHWAY

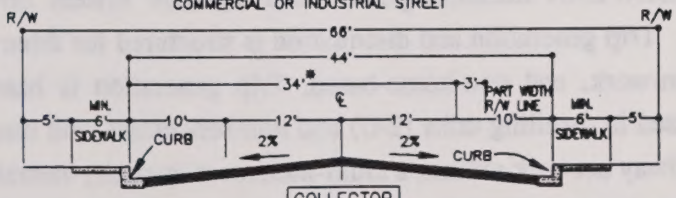


SECONDARY HIGHWAY



INDUSTRIAL COLLECTOR

*PART WIDTH STREET SECTION FOR AN INTERIOR COMMERCIAL OR INDUSTRIAL STREET



COLLECTOR

*PART WIDTH STREET SECTION FOR ALL COLLECTOR STREET – 34' IMPROVEMENTS ON 48' R/W

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

RIVERSIDE COUNTY GENERAL PLAN
ROADWAY CROSS-SECTIONS

FIGURE 3.9-7

Southwest District Traffic Model

The Southwest District Traffic Model (SDTM) was developed as a coordinated study in response to the "buildout" traffic analysis requirements of the Riverside County Transportation Department. The SDTM East Subarea was the focus of a coalition of project applicants known as the Airport Community Transportation Study (ACTS) group. The SDTM West Subarea was initiated by Donahue Schriber to fulfill a condition of approval for the Murrieta Springs mall project.

The SDTM is a windowed model derived from the microcomputer based RIVSAN model developed by DKS Associates for the Riverside County Transportation Commission (RCTC) and the Southern California Association of Governments (SCAG). The model is divided into primary and secondary areas. The primary area focuses on the city of Murrieta and French Valley Airport.

Within the primary study area, the zone structure and roadway network were refined to provide a greater level of detail. The base roadway network conforms to the Riverside County General Plan Circulation Element. An alternative roadway network was also developed in conjunction with the Airport Community Transportation Study (ACTS) area. The roadway network and zone system from the City of Temecula Traffic Model were incorporated into the SDTM with the cooperation of Wilbur Smith Associates.

Traffic projections were presented for three alternative buildout network scenarios, as follows:

- Southwest Area Community Plan (SWAP) with the General Plan roadway network.
- SWAP plus Airport Community Transportation Study (ACTS) projects with ACTS roadway network.
- SWAP plus revised ACTS projects with revised ACTS roadway network.

The Southwest District Traffic Model was developed using time-period traffic modeling procedures which incorporate a three-step process of trip generation, trip distribution and traffic assignment. The traffic model utilizes the TRANPLAN microcomputer based software system running on MS-DOS (IBM) compatible computers. Trip generation and distribution is structured for three trip purposes: home-based work, home-based non-work, and non-home-based. Trip generation is based on land use data with residential uses expressed in dwelling units (DU) and non-residential land uses expressed in acres (AC). Assignment to the roadway network utilizes a multi-increment, capacity-restraint methodology for 3 time periods of the day (AM, PM and off-peak) which are combined to produce the ADT forecast.

Based on the ACTS traffic assignments, roadway sizing and corridor requirements were estimated. These requirements are shown in Figure 3.9-8 which depicts the recommended circulation system classifications.

LEGEND

- REGIONAL FREEWAY CORRIDOR / HOV FACILITY
- MULTI-MODAL TRANSPORTATION CORRIDOR
- AUGMENTED URBAN ARTERIAL
- URBAN ARTERIAL
- ARTERIAL
- MAJOR
- SECONDARY
- PROPOSED ADDITIONAL INTERCHANGE

Scale In Feet
0 3500 7000

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

ACTS CIRCULATION RECOMMENDATIONS

FIGURE 3.9-8

The results of the ACTS traffic assignments indicated that two additional General Plan corridor designations are desirable. These are the inclusion of an Augmented Urban Arterial cross-section on Murrieta Hot Springs Road between the I-15 and I-215, and the designation of several key transportation corridors as Multi-Modal Transportation Corridors.

The use of the Augmented Urban Arterial cross-section is recommended for a segment of Murrieta Hot Springs Road between the I-15 and I-215. The utilization of this cross-section will provide enhanced capacity for roadway segments requiring roadway capacity in excess of that which can be provided by the standard Urban Arterial cross-section shown in figure 3.9-7.

The ACTS final report recommended the following changes to Riverside County General Plan Circulation Element roadways or equivalent city of Murrieta facilities:

- Designate four multi-modal transportation corridors: Palomar Street/Washington Avenue/Diaz Road north of Winchester Road, Winchester Road north of Diaz Road, Clinton Keith Road between Palomar Street and Winchester Road, and Menifee Road/Los Alamos Road/Ivy Street north of Washington Avenue.

- Upgrade Keller Road/Baxter Road between Briggs Road and the I-215 to an Arterial classification from a Secondary classification.

- Upgrade Nutmeg Street between Washington Street and Jefferson Avenue to a Major classification from a Secondary classification.

- Upgrade Murrieta Hot Springs Road between the I-15 and I-215 to an Augmented Urban Arterial classification from an Urban Arterial classification.

- Upgrade Murrięta Hot Springs Road between the I-215 to east of Whitewood Road, and also between Date Street and Sky Canyon Drive, to an Urban Arterial classification from an Arterial classification.

- Upgrade Date Street between Madison Avenue and Margarita Road to an Urban Arterial classification from an Arterial classification.

- Upgrade Borel Road between Winchester Road and Butterfield Stage Road to a Major classification from a Secondary classification.

- Reclassify Thompson Road between Leon Road and Washington Street to a Secondary classification from a Major classification, in conjunction with the realignment of Leon Road at Winchester Road to create a more consistent through route for north-south traffic.

- Upgrade Sky Canyon Drive from Borel Road to Rancho Club Drive to a Major classification from a Secondary classification.

- Upgrade Leon Road from north of Borel Road to Thompson Road to a Major classification from a Secondary classification.

Provide for the following new roadway features:

- An interchange on the I-215 at Keller Road.

- The extension of Keller Road northwest of the I-215 to Bradley Road as a Major classification.

- The realignment of Baxter Road between Winchester Road and Briggs Road to join with Keller Road at Menifee Road.

- The realignment of Leon Road between Baxter Road and Winchester Road.

- The extension of Beeler Road from Scott Road to Washington Street as a Secondary classification.

- The extension of Auld Road northwest from Winchester Road to Clinton Keith Road as a Major classification.

- The extension of Hunter Road between Winchester Road and Whitewood Road as a Major classification.

- The extension of La Estrella Road between Nutmeg Street and Menifee Road including a new I-215 overcrossing as a Major classification.

- The extension of La Estrella Road between Frederick Street and Baxter Road as a Major classification.

- The northerly extension of Nutmeg Street to Sunset Avenue between Scott Road and Clinton Keith Road as a Secondary classification.

- The extension of Zeiders Road from Keller Road to Clinton Keith Road as a Secondary classification.

- The addition of overcrossings of the I-215, one between Murrieta Hot Springs Road and Los Alamos Road, and one between Los Alamos Road and Clinton Keith Road.

The Southwest District Traffic Model represented a significant "first step" to understanding the long-term transportation needs of the city of Murrieta in the context of existing and proposed land use plans. Significant changes were recommended for both the city and county General Plan circulation systems. Recommended land use changes were also presented for the participating ACTS properties. These network and land use recommendations will be taken into consideration as the City of Murrieta General Plan process continues.

North Murrieta Traffic Model

The North Murrieta Traffic Model (NMTM) is an expanded version of the Southwest District Traffic Model (SDTM), a comprehensive traffic modeling effort to define buildout demands (Post 2015) on the roadway system. The NMTM includes the proposed land uses for the Murrieta Hills Specific Plan, Greer Ranch Specific Plan, Hamilton Property Specific Plan, Murrieta Highlands Specific Plan, and Golden City Specific Plan.

NMTM recommendations are summarized on Figure 3.9-9 and discussed below:

- Upgrade/extend Keller Road west of the proposed new Keller Road interchange with the I-215 to an Urban Arterial classification.

- Add Zeiders Road between Scott Road and Clinton Keith Road as a Secondary/Major/Arterial and to serve areawide north-south travel needs.

- Upgrade Pabesu Road north of Clinton Keith Road between Nutmeg Street and Greer Road/Zeiders Road to a Secondary classification.

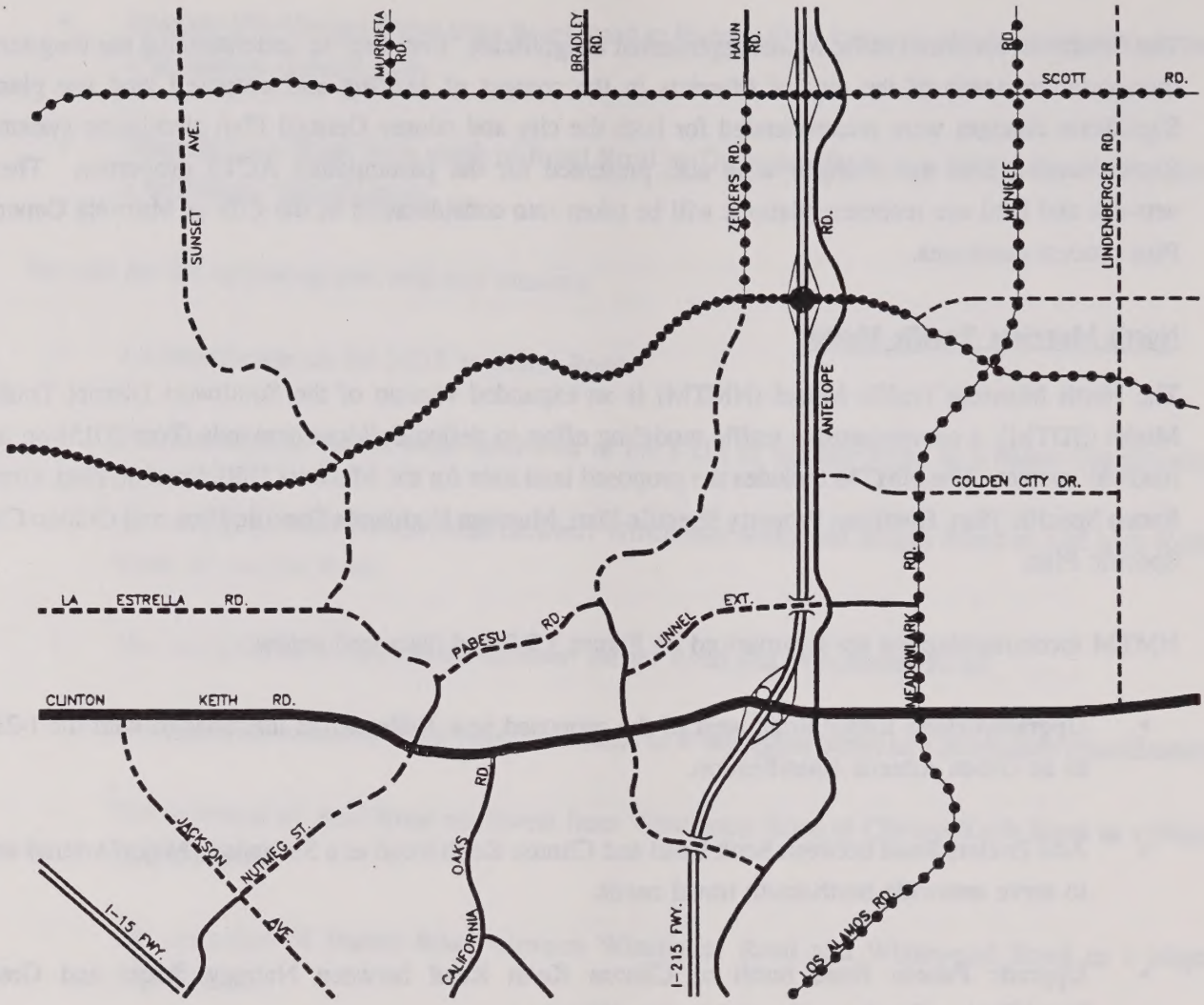
- Add Meadowlark Road between Keller Road and Clinton Keith Road as an Arterial classification to serve as a more appropriately aligned buffer between land use areas east of the I-215.

- Add Golden City Drive between Antelope Road and Lindenberger Road as a Secondary classification.

- Realign Baxter Road between Keller Road and Briggs Road to a more appropriate alignment.

- Eliminate Menifee Road between Keller Road and Los Alamos Road.

- Add Lindenberger Road between Scott Road and Clinton Keith Road as a Secondary classification to provide access to development in the area previously served by Menifee Road.



LEGEND

- REGIONAL FREEWAY CORRIDOR / HOV FACILITY
- MULTI-MODAL TRANSPORTATION CORRIDOR
- URBAN ARTERIAL
- ARTERIAL
- MAJOR
- SECONDARY
- PROPOSED ADDITIONAL INTERCHANGE

NORTH MURRIETA TRAFFIC MODEL RECOMMENDATIONS

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

FIGURE 3.9-9

AIR QUALITY

SECTION 3.10

3.10 AIR QUALITY

INTRODUCTION

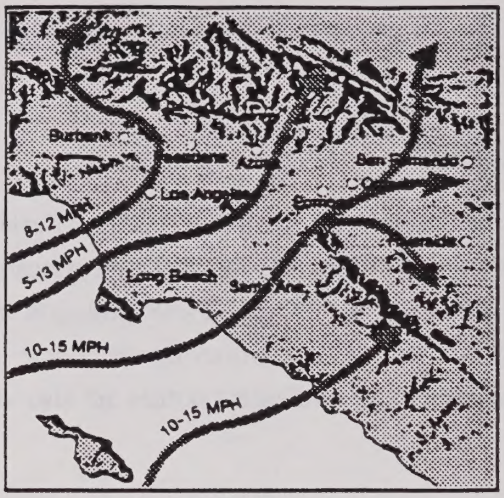
This section addresses the air quality characteristics of the South Coast Air Basin and the Murrieta study area, including the climate, wind flow patterns, meteorological influences, and pollutant concentrations. The air quality of the region and the city are discussed in relation to federal and state pollution standards and air quality planning requirements. Sensitive receptors, or facilities which house people who are potentially sensitive to air pollution such as hospitals, schools and convalescent homes are also identified and mapped.

REGIONAL CLIMATE

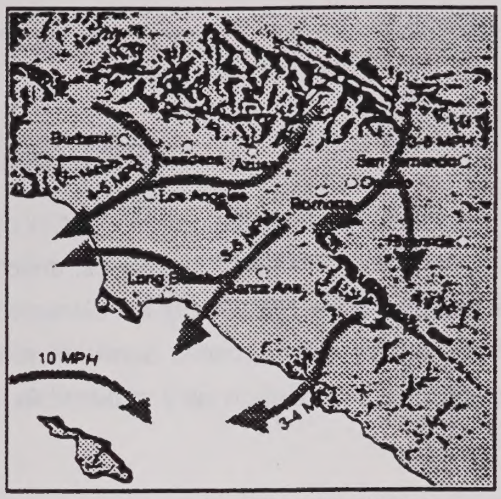
For the purposes of air quality planning, Murrieta is located within the South Coast Air Basin, a 6,600 square-mile area encompassing Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The climate in the South Coast Air Basin (SCAB) is influenced by the topographic and geographic conditions of the basin. The basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino and San Jacinto mountains to the north and east. The region lies in the semipermanent high pressure zone of the Eastern Pacific. As a result, the climate is characterized by warm summers, mild winters, infrequent rainfall, frequent morning coastal fog, and moderate onshore breezes. Precipitation is generally limited to a few storms during the winter "wet" season between November and April. Rainfall patterns in the region average about 12-13 inches per year.[1]

Terrain features allow varying micro-climates to exist within the area's overall climate. The pattern of mountains and hills within the basin is primarily responsible for the wide variations of rainfall, temperatures, and localized winds that occur throughout the region. Temperature variations have an important influence on basin wind flow, dispersion along mountain ridges, vertical mixing, and photochemistry. Since the moderating marine influence decreases with distance from the coast, monthly and average spreads between temperatures are greatest inland. For example, annual temperatures in the inland Murrieta Valley region of the basin average 82°F during the summer months and 49°F in the winter. By contrast, the coastal portions of the basin rarely experience daytime highs over 70°F during the summer months (due to the cooling effects of the daytime onshore winds) and 54°F in the winter.

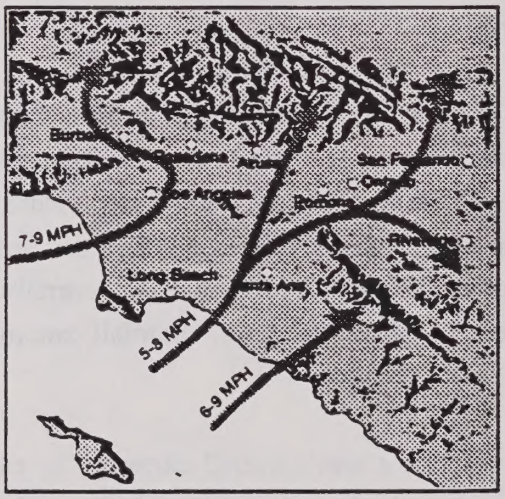
The dominant daily wind pattern in the basin is a diurnal sea breeze followed by a nocturnal land breeze (see Figure 3.10-1). This pattern is broken only by occasional winter storms and infrequent strong northeasterly Santa Ana winds from the mountains and deserts. The net effect of this dominant daily wind



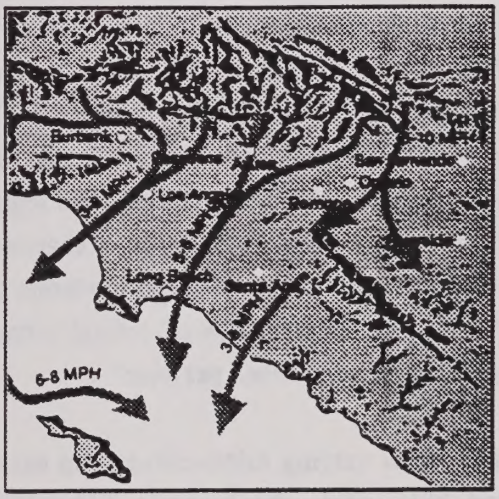
TYPICAL SUMMER DAYTIME OCEAN WINDS
(Noon to 7:00 PM)



TYPICAL SUMMER NIGHT DRAINAGE WINDS
(Midnight to 5:00 AM)



TYPICAL WINTER DAYTIME OCEAN WINDS
(Noon to 5:00 PM)



TYPICAL WINTER NIGHT DRAINAGE WINDS
(Midnight to 7:00 AM)

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

DOMINANT WIND PATTERNS IN THE BASINS

FIGURE 3.10-1

pattern is that daytime air pollutant emissions from coastal sources are carried inland and nighttime winds carry the inland pollution to the coastal areas. However, the weak nighttime wind conditions can allow for localized stagnation of pollutants inland.

LOCAL CLIMATE

The city of Murrieta is located in an interior valley thermal belt microclimatic zone. This means that the area's climate is influenced more by warm continental air masses rather than onshore ocean breezes. The climatological station closest to Murrieta is located in the city of Lake Elsinore. Annual average daytime temperatures in the Murrieta Valley area range from 87°F in August, to 61°F in January and, annual rainfall in the Murrieta Valley area (registered at the Elsinore monitoring station) varies from three inches in January to less than one inch between May and October. Recent daytime temperatures have registered above 100°F during the summer months (100°F -107°F) cooling to overnight lows in the mid 40's to upper 50's range in the winter.[2]

AIR QUALITY

Air Quality Standards

National and state air pollution containment standards are set by the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB), for the following pollutants: ozone, carbon monoxide, nitrogen dioxide, PM_{10} (suspended particulate matter 10 microns or less in diameter), sulfur dioxide, and lead. The South Coast Air Quality Management District (SCAQMD) also monitors for compliance with two other state standards: sulfates and visibility. Federal and state air quality standards are described in Table 3.10-1. Containment levels in the ambient air are sampled and compared to national and state standards to determine air quality.

The EPA and CARB pollution standards are set at levels which help protect public health and welfare. Prolonged exposure to excessive concentrations of certain air pollutants can cause severe health problems. For example, ozone (O3) a colorless toxic gas which is formed by the photochemical reactions of reactive organic gases (ROG) and oxides of nitrogen (NOx) in sunlight, can cause lung and eye irritation and respiratory function impairment. Carbon monoxide (CO) is a colorless gas which interferes with the transfer of oxygen to the brain. Nitrogen dioxide (NO2) is a reddish-brown gas which at high levels can cause breathing difficulties. PM_{10} (suspended particulate matter 10 microns or less in diameter) causes a greater health risk than larger sized particles since these fine particles can more easily penetrate the defenses of the human respiratory system and cause irritation by themselves and in combination with gasses (see Table 3.10-2).

TABLE 3.10-1
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS[1]

Pollutant	Averaging Time	California Standard[3]	Federal Standards[2] Primary[4]	Secondary[5]
Ozone	1-hour	> .09 ppm	> .12 ppm	> .12 ppm
Carbon Monoxide	1-hour	> 20 ppm	> 35 ppm	> 35 ppm
	8-hour	≥ 9.1 ppm	≥ 9.5 ppm	≥ 9.5 ppm
Nitrogen Dioxide	1-hour	> .25 ppm	---	---
	Annual Arithmetic Mean	---	> .0534 ppm	> .0534 ppm
Sulfur Dioxide	1-hour	> .25 ppm	---	---
	3-hour	---	---	> .50 ppm
	24-hour	≥ .05 ppm[6]	> .14 ppm	---
	Annual Arithmetic Mean	---	> 80 ug/m^3	---
Suspended Particulate Matter (PM_{10})	24-hour	> 50 ug/m^3	> 150 ug/m^3	> 150 ug/m^3
	Annual Geometric Mean	> 30 ug/m^3	---	---
	Annual Arithmetic Mean	---	> 50 ug/m^3	> 50 ug/m^3
Sulfates	24-hour	≥ 25 ug/m^3	---	---
Lead	Monthly Average	≥ 1.5 ug/m^3	---	---
	Quarterly Average	---	> 1.5 ug/m^3	> 1.5 ug/m^3
Hydrogen Sulfide	1-hour	≥ .03 ppm	---	---
Vinyl Chloride	24-hour	≥ .010 ppm	---	---
Ethylene	1-hour	≥ .50 ppm	---	---
	8-hour	≥ .10 ppm	---	---
Visibility-Reducing Particles	1 Observation	Visibility < 10 miles[7]	---	---

TABLE (Continued)

[1] Concentrations expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees C and a reference pressure of 760 mm of mercury. Note: ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas. ug/m^3 = micrograms per cubic meter. mg/m^3 = milligrams per cubic meter.

[2] National Standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

[3] California standards for ozone, carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter - PM_{10}, are values that are not to be exceeded. The sulfates, lead, hydrogen sulfide, vinyl chloride, and visibility-reducing particles standards are not to be equaled or exceeded.

[4] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency.

[5] National Secondary Standards: the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.

[6] At locations where the State standards for ozone and/or suspended particulate matter are violated. National standards apply elsewhere.

[7] Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors. Standards based on hours with relative humidity less than 70%.

Source: California Air Resources Board; SCAQMD 1990 Air Quality Summary

TABLE 3.10-2
HEALTH EFFECTS SUMMARY OF THE CRITERIA AIR POLLUTANTS

Ozone	■ eye irritation ■ respiratory function impairment
Carbon Monoxide	■ impairment of oxygen transport in bloodstream increase of carboxyhemoglobin ■ aggravation of cardiovascular disease ■ impairment of central nervous system function ■ fatigue, headache, confusion, dizziness ■ can be fatal in the case of very high concentrations in enclosed places
Sulfur Dioxide	■ aggravation of chronic obstruction lung disease ■ increased risk of acute and chronic respiratory illness
Nitrogen Dioxide	■ risk of acute and chronic respiratory illness
Total Suspended Particulates	■ increased risk of chronic respiratory illness with long exposure ■ altered lung function in children ■ with SO_2, may produce acute illness ■ particulate matter 10 microns or less in size (PM_{10}) which may be inhaled and possibly lodge in and/or irritate the lungs ■ impairment of blood function and nerve construction ■ behavioral and learning problems in children

Source: **South Coast Air Quality Management District CEQA Air Quality Handbook May, 1992 (Draft).**

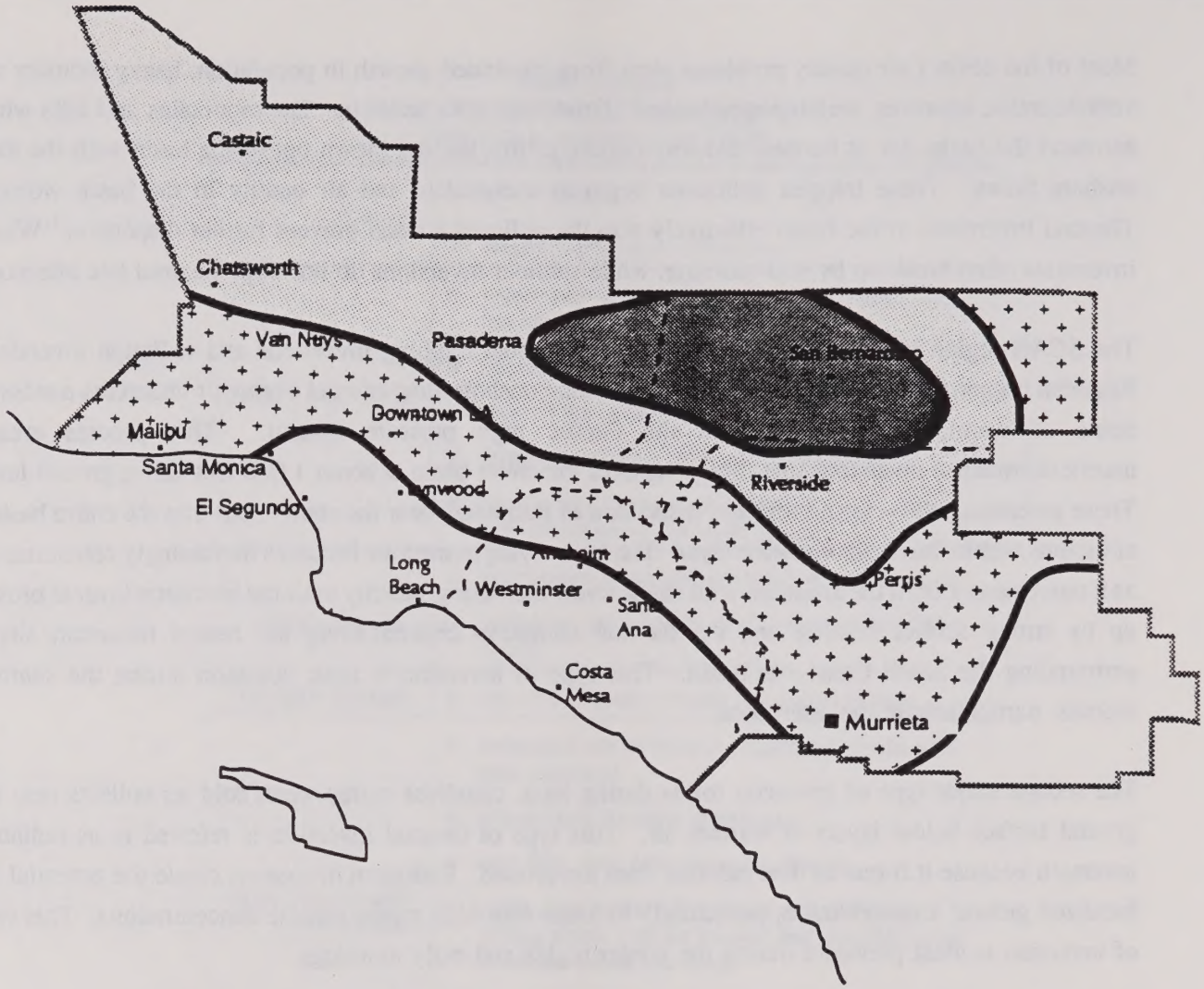
Existing Regional Air Quality

The South Coast Air Quality Management District (SCAQMD) samples ambient air quality at over 38 monitoring stations in the basin. The South Coast Air Basin is considered to have the worst air quality problem in the nation. Despite having introduced many strict air pollution emission controls, the basin still fails to meet the federal air quality standards for four of the six criteria pollutants; ozone (Figure 3.10-2), carbon monoxide (Figure 3.10-3), nitrogen dioxide (Figure 3.10-4) and PM_{10} (Figure 3.10-5). Ozone levels exceed national and state standards throughout the basin. In 1989, the basin was the only area in the nation that failed to meet nitrogen dioxide standards. Carbon monoxide and ozone concentrations in the basin were among the highest in the nation, (approximately three times the federal standard), and particulate (PM_{10}) concentrations were approximately 80 percent above federal standards.

Most of the basin's air quality problems stem from continued growth in population, heavy industry and vehicle traffic however, area topography and climatology also factor in. The mountains and hills which surround the basin, act as barriers and trap pollutants that are not blown out of the basin with the daily onshore flows. These trapped pollutants begin to accumulate and air quality in the basin worsens. Thermal inversions in the basin effectively trap the polluted air and prevent further dispersion.[3] Winter inversions often break up by mid-morning, while summer inversions do not disperse until late afternoon.

The SCAB region has two types of inversions - regional trapping inversions and radiation inversions. Regional trapping inversions occur when the daytime onshore flow of cool ocean air undercuts a massive dome of warm, sinking air within the Pacific high pressure system. This process creates marine/subsidence inversions that form a lid over the entire basin at about 1,000 feet above ground level. These inversions allow for mixing and dispersion of pollutants near the source, but trap the entire basin's emissions within the shallow marine layer. The lower lying marine air becomes increasingly contaminated as it moves away from the coastline with smog levels increasing steadily until the inversion layer is broken up by strong surface heating and the thermal chimneys created along the heated mountain slopes surrounding the South Coast Air Basin. This type of inversion is most common during the summer months, particularly in the afternoons.

The second major type of inversion forms during long, cloudless nights when cold air collects near the ground surface below layers of warmer air. This type of thermal inversion is referred to as radiation inversion because it forms as heat radiates from the ground. Radiation inversions create the potential for localized ground level pollution, particularly in areas with high motor vehicle concentrations. This type of inversion is most prevalent during the winter nights and early mornings.



NUMBER OF DAYS FEDERAL OZONE STANDARD EXCEEDED IN 1988

(1-HOUR AVERAGE > 0.12 ppm)

- Below 20
- 20 to 80
- 80 to 120
- Above 120

South Coast Air Basin Boundary

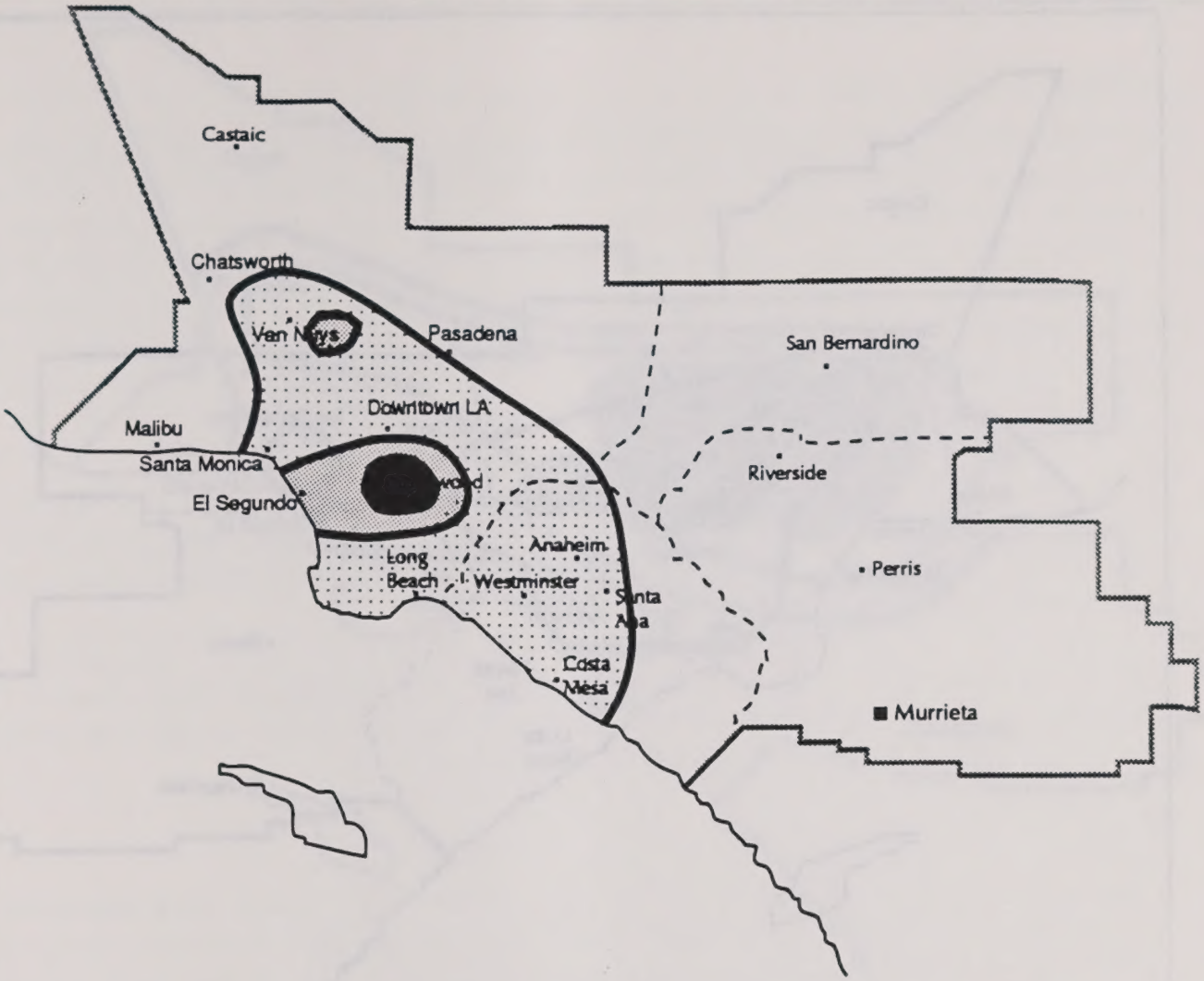
Source: South Coast Air Quality Management District, The Path to Clean Air, 1989.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

REGIONAL OZONE LEVELS

FIGURE 3.10-2



NUMBER OF DAYS FEDERAL CO STANDARD EXCEEDED IN 1988

(8-HOUR AVERAGE > 9.4 ppm)

- 0
- 1 to 10
- 10 to 30
- 30 plus

South Coast Air Basin Boundary

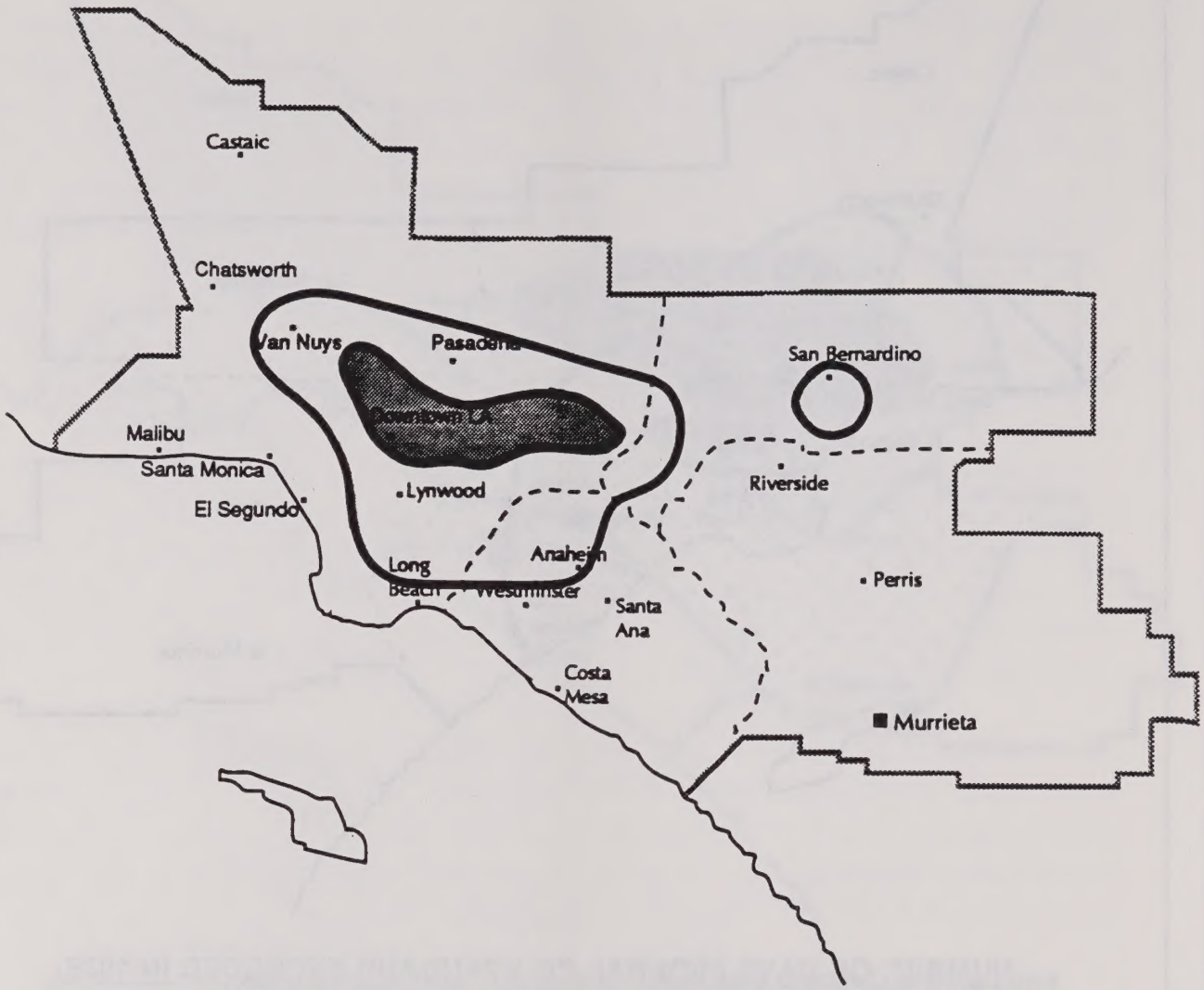
Source: South Coast Air Quality Management District, The Path to Clean Air, 1989.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

REGIONAL CARBON MONOXIDE LEVELS

FIGURE 3.10-3



ANNUAL AVERAGE (pphm)

Less than 4.0

4.0 to 5.3

5.3 or more

South Coast Air Basin Boundary

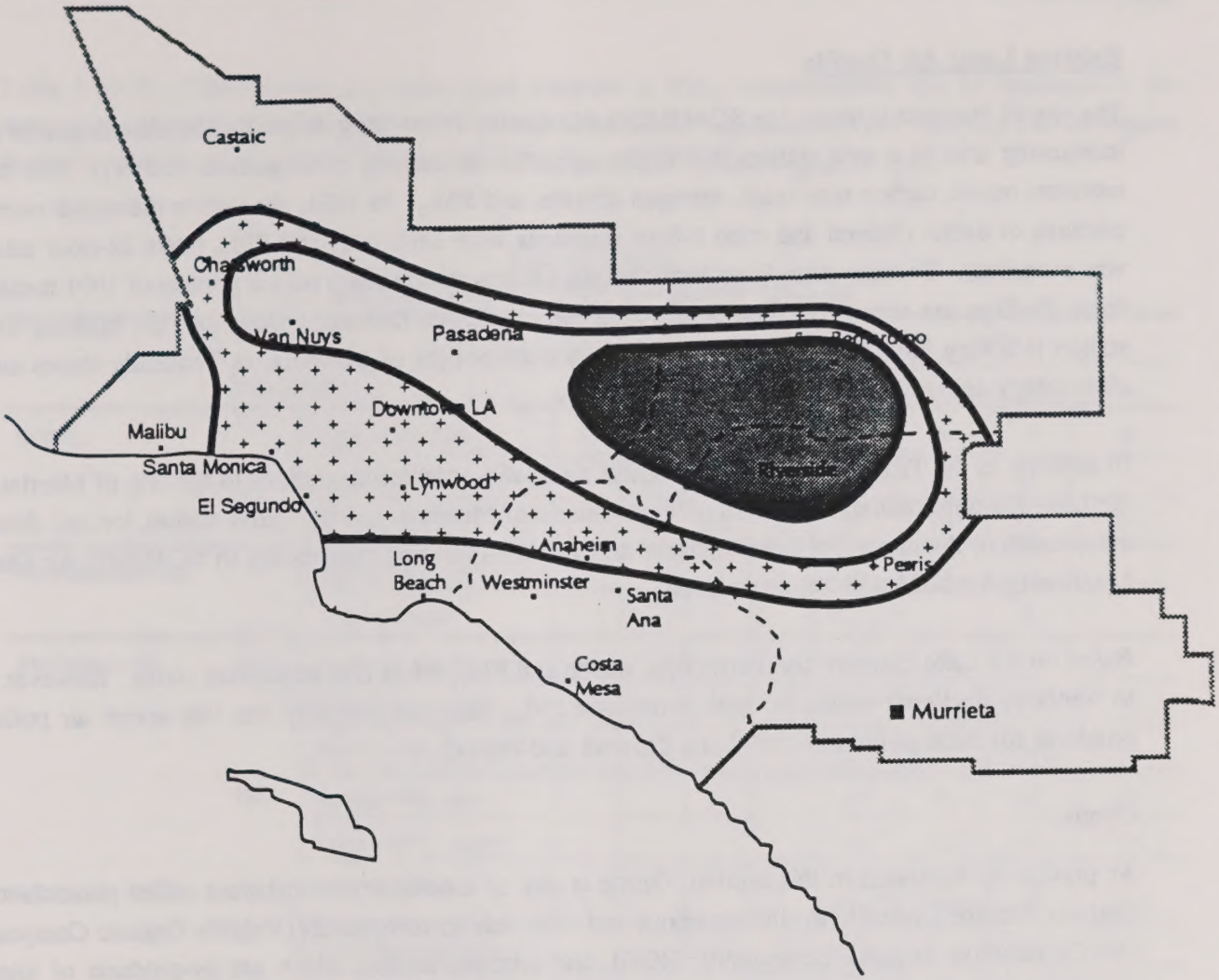
Source: South Coast Air Quality Management District, The Path to Clean Air, 1989.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

REGIONAL NITROGEN DIOXIDE LEVELS

FIGURE 3.10-4



ANNUAL AVERAGE (µg/m³)

- < 50
- 50 to 60
- 60 to 70
- Above 70

South Coast Air Basin Boundary

Source: South Coast Air Quality Management District, The Path to Clean Air, 1989.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

REGIONAL pm10 LEVELS

FIGURE 3.10-5

Existing Local Air Quality

The city of Murrieta is located in SCAQMD's Air Quality Monitoring Area 26. The closest station in the monitoring area is a new station that began operation in the city of Temecula in 1991. The station monitors ozone, carbon monoxide, nitrogen dioxide, and PM_{10}. In 1991, the station measured excessive amounts of ozone (federal and state 1-hour standards were exceeded) and PM_{10} (state 24-hour standard was exceeded). Because there is no historical data at this station, with only a portion of 1991 measured, these findings are noteworthy but insufficient for conclusive findings. However, the opening of this station is a very important step in the air quality management of Murrieta, as Temecula shares similar climatology and ambient air quality concentrations.

In addition to the Temecula station, the closest air quality monitoring stations to the city of Murrieta are the Lake Elsinore station, located 10 miles northwest of Murrieta, and the Perris station, located about 16 miles north of the city. The Lake Elsinore and Perris monitoring stations are in SCAQMD Air Quality Monitoring Areas 25 and 24, respectively.

Based on the Lake Elsinore and Perris data, ozone and PM_{10} are at non-attainment status. However, due to southerly declining trends for both ozone and PM_{10}, Murrieta probably has less severe air pollutant problems for these pollutants than Lake Elsinore and Perris.[4]

Ozone

As previously discussed in this section, Ozone is one of a number of substances called photochemical oxidants that are formed when hydrocarbons and other related compounds (Volatile Organic Compounds (VOC), Reactive Organic Compounds (ROG), and nitrogen oxides) which are by-products of internal combustion engines, interact in the presence of ultraviolet sunlight. Since these photochemical reactions require sunlight, peak concentrations tend to occur in the summer and near the middle of the day when the sunlight is most intense. Daily wind patterns in the South Coast Air Basin carry the coastal ozone and other air pollutant emissions inland. As a result, ozone concentrations tend to be more intense in inland valley areas like the city of Murrieta.

The Lake Elsinore and Perris air monitoring stations registered increases in the state 1-hour ozone (O_3) standard from 1988 to 1989, decreases from 1989 to 1990, and increases again from 1990 to 1991. At Lake Elsinore, the closer station to Murrieta, the state 1-hour ozone standard (.09 ppm) was exceeded approximately *1 out of every 4 days in 1991*. Overall, the area has seen a sharp increase in ozone violations, as Lake Elsinore exceeded the state 1-hour standard on only *3 days in 1988* (See Table 3.10-3 and Figure 3.10-6).

PM_{10}

Suspended particulate matter 10 microns or less in diameter (PM_{10}) consist of particles in the atmosphere which come from a variety of sources including; road dust, diesel soot, combustion products, abrasion of tires and brakes, construction operations and wind storms. The Perris air monitoring station showed an increase in the maximum 24 hour PM_{10} concentrations from 1988 to 1990 and a decline in 1991 (see

Table 3.10-3). This increase and subsequent decrease in PM_{10} concentrations can be attributed to the increase in construction activity in southwest Riverside County between 1988 and 1990 and the subsequent decline in construction activity during 1991. (See Table 3.10-3 and Figure 3.10-6).

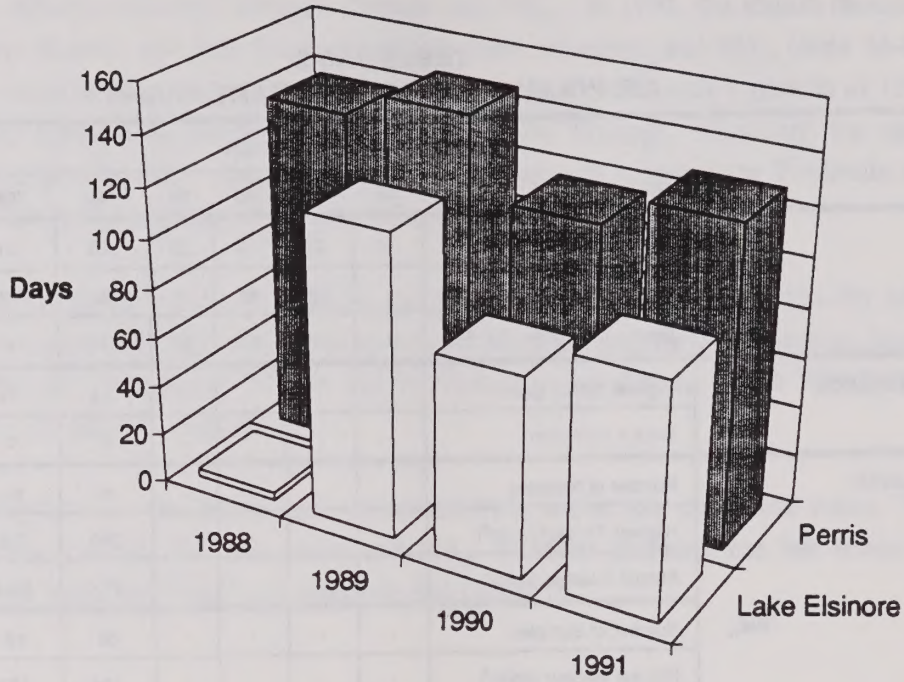
TABLE 3.10-3
AIR POLLUTANT DATA SUMMARY 1988-91

POLLUTANT			Lake Elsinore				Perris			
			'88	'89	'90	'91	'88	'89	'90	'91
OZONE:		Highest 1-hour (ppm)	.15	.24	.19	.20	.23	.21	.19	.20
		Days > 0.12 ppm	1	62	36	45	82	78	62	71
		Days > 0.09 ppm	3	121	80	93	137	147	116	128
NITROGEN DIOXIDE:		Highest 1-hour (ppm)	-	-	-	-	.14	.14	.11*	-
		Days > 0.25 ppm	-	-	-	-	0	0	0*	-
PARTICULATES:	TSP	Number of Samples	-	-	-	-	60	58	30*	-
		Highest 24-hour (ug/m³)	-	-	-	-	260	303	232*	-
		Annual Average (AGM)	-	-	-	-	91.4	98.4	71.6*	-
	PM_{10}	Number of Samples	-	-	-	-	60	59	61	60
		Highest 24-hour (ug/m³)	-	-	-	-	164	187	250	113
		Samples > 50 ug/m³	-	-	-	-	38 (63%)	39 (66%)	32 (52%)	26 (43%)
		Annual Average (AAM)	-	-	-	-	59.4	61.4	58.9	48.8
		Annual Average (AGM)	-	-	-	-	51.9	52.2	49.6	43.0
SULFATE:		Highest 24-hour (ug/m³)	-	-	-	-	11.5	15.9	12.9*	-
		Days ≥ 25 ug/m³	-	-	-	-	0	0	0*	-

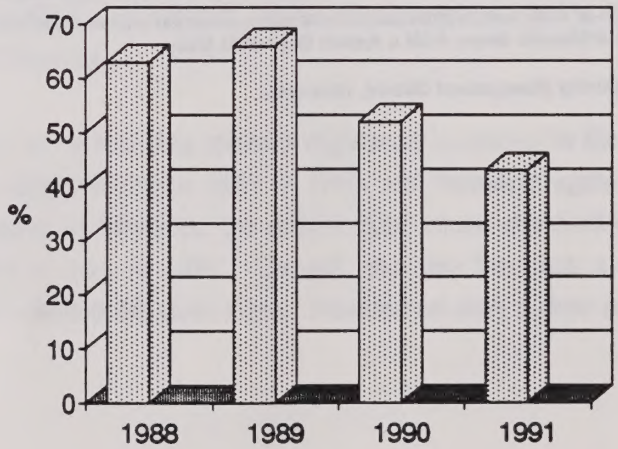
*** = less than 12 full months of data; ppm = parts per million; ppb = parts per billion; ug/m³ =micrograms per cubic meter; - = Not Monitored; AAM = Annual Arithmetic Mean; AGM = Annual Geometric Mean**

Source: *South Coast Air Quality Management District*, 1988-1991.

Days Exceeding State Ozone Standard (0.09 ppm)



Percentage of Samples Exceeding State 24-hour PM10 Standard (50 ug/m3) - Perris Monitoring Station



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

LOCAL OZONE & pm10 LEVELS

FIGURE 3.10-6

AIR QUALITY PLANNING REQUIREMENTS

Federal Clean Air Act Requirements

The Federal Clean Air Act (1977 Amendments) states that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards by December 31, 1987. The South Coast Air Basin could not meet the deadline for ozone, nitrogen dioxide, carbon monoxide, or PM_{10}. Congress enacted amendments to the Clean Air Act in October 1990 which divided the country into five categories of ozone nonattainment areas, ranging from marginal to extreme. Deadlines were based on the severity of the local air pollution problem, ranging from 3 to 20 years for areas with extremely polluted air. The only section of the country included in the "extreme" category was the South Coast Air Basin. Although the SCAB has a longer deadline to attain the standards, it also has much stricter control requirements, that include offsetting all increases from existing stationary sources, transportation control measures, and mandatory use of clean or reformulated fuels.

In the South Coast Air Basin, the agencies designated by the governor to develop regional air quality plans are the South Coast Air Quality Management District (SCAQMD) and the Southern California Association of Governments (SCAG). The two agencies adopted an Air Quality Management Plan (AQMP) in 1979 and revised it in 1982 to achieve attainment of federal air quality standards by 2000. However, following a court case in 1987, the EPA disapproved the 1982 AQMP because it had not shown attainment by 1987, as required by the 1977 Clean Air Act Amendments.

1989 Air Quality Management Plan (AQMP)

Another revision to the AQMP was adopted by SCAG and the SCAQMD on March 17, 1989. The 1989 AQMP projected attainment of all national standards by the year 2007. The 1989 AQMP was approved by the California Air Resources Board (CARB), but was not approved by the federal Environmental Protection Agency (EPA) for incorporation in the State Implementation Plan (SIP) because the 2007 deadline for compliance was not approved under the 1977 Clean Air Act. Because of somewhat different plan development requirements in the 1990 Clean Air Act Amendments, EPA will require a new plan submittal for approval as the local SIP.

The 1989 AQMP relied in part on technology which had not yet been invented to meet its year 2007 target. It called for stricter controls on automobiles, paints and coatings, new industries, and transportation usage. The plan was divided into three tiers, with Tier I representing measures which were available for immediate implementation, Tier II consisting of measures that needed further development but were based on known technology, and Tier III representing emission reduction measures that were dependent on the development of new technology, including heavy reliance on clean fueled vehicles (Table 3.10-4).

TABLE 3.10-4
SUMMARY OF AQMP CONTROL MEASURES

TIER I - FULL SCALE IMPLEMENTATION OF KNOWN TECHNOLOGY

A. Surface Coating and Solvent Use - use of low solvent coatings, alternative clean-up techniques and solvents, high transfer efficiency techniques for coating applications, and add-on control devices.

B. Petroleum and Gas Production/Distribution - stringent use of add-on control devices for production, refining, and product distribution.

C. Industrial and Commercial Processes - use of add-on control devices or alternative clean fuels to control emissions from small sources now exempt or unregulated by SCAQMD.

D. Residential and Public Sector - residential energy consumption controls and emission reductions through improved local government administrative procedures.

E. Agricultural Processes - controls on pesticide applications, improved housekeeping procedures, and alternative waste disposal methods.

F. Other - measure affecting more than one source category, such as the use of Best Available retrofit Control Technology (BARCT), limit of liquid storage, and energy conservation.

G. Motor Vehicles - improved motor vehicle emission control systems and stricter standards.

H. Transportation Systems and Land Use - reduce vehicle use through means such as alternative work schedules, telecommunication, and improved traffic flow.

I. Off Road Vehicles - reduce emissions from railroads, boats and ships, and aircraft by use restrictions or stricter emission standards.

TIER II - SIGNIFICANT ADVANCEMENT OF TECHNOLOGY AND REGULATORY INTERVENTION

A. Surface Coating and Solvent Use Goals - 50% reduction of the remaining ROG emissions after implementing Tier I.

B. Transportation Source Controls - 40% penetration of clean fuel passenger vehicles; 70% penetration of clean fuel freight vehicles; 50% penetration of clean fuel off road vehicles.

C. Other - further controls on all sources, including indirect sources, as necessary to reach Tier II goals.

TIER III - MAJOR TECHNOLOGICAL BREAKTHROUGHS

A. Surface Coating and Solvent Use - elimination of all ROG through alternative processes and products.

B. Electric Vehicles - replace automobiles and light/medium duty trucks with electric or solar powered models.

C. Clean Fuel Vehicles - replace all vehicles that can not be electrified (e.g., heavy trucks) with clean fuel models.

Source: SCAQMD Air Quality Management Plan 1991.

Local governments, expected to take a much more significant role in carrying out the 1989 AQMP than they had in previous plans, were asked to specify the measures they would use to improve air quality in air quality elements which were to be amended into each local general plan. Emphasis in these elements was to be on actions to reduce local contributions to air pollution from vehicle trips, energy usage, local vehicle congestion (a major cause of carbon monoxide buildups), and local sources of particulates, including grading and construction. As described in Appendix IV-G of the 1989 Air Quality Management Plan, the air quality elements were expected to address specified measures, as appropriate, in Parking Management, Auto Use Restrictions, Truck Dispatching, and Growth Management.

A major objective of the 1989 AQMP was achieving greater balance between housing and employment opportunities throughout the region. This would ultimately reduce the commute distance of home-to-work trips, and overall vehicle emissions. As a result, the existing job/housing ratios in subregions which had previously been established for planning purposes were identified and subregions which had either a disproportionate number of housing units or jobs were assigned job/housing goals intended to bring the subregion into greater balance by the year 2010. Local governments are expected to monitor new development and take measures to encourage greater housing density in areas projected to be rich in jobs. Local governments are also expected to either decrease projected housing units or increase projected job opportunities in areas which were projected to have an excess of housing.

Many of the Tier I measures have already been enacted. One of the most significant measures is a revised Regulation XIII, the District's New Source Review Rule, which now requires offsets from all emission increases (To operate a new pollution source, an existing source with equivalent emissions must be eliminated). By contrast, the former threshold for a key pollutant, reactive organic gases, was 75 pounds/day of new emissions allowed. Tighter restrictions have also been adopted for internal combustion engines and a number of industrial solvents and coatings.

California Clean Air Act

In 1988, the California Legislature enacted the California Clean Air Act (CCAA). The CCAA amended the enabling authority for air pollution control districts in California. The legislature gave these districts, including the SCAQMD, broad new authority through the CCAA to regulate motor vehicle use with indirect source controls in areas that have not met national or state ambient air quality standards.

The CCAA requires that regional emissions be reduced by 5 percent per year, averaged over 3 year periods, until attainment can be demonstrated. Each area that does not currently meet a national or state ambient air quality standard is to prepare a plan which demonstrates how the 5 percent reductions will be achieved. Plans were to be adopted locally and submitted to the CARB by June 30, 1991. Areas, with the most heavily degraded air quality, including the South Coast Air Basin, are required to reduce emissions 50 percent from 1987 levels by December 31, 2000. Plans must be updated in 1998 if attainment cannot be demonstrated by the year 2000.

1991 Air Quality Management Plan

In July, 1991, the SCAQMD adopted a new AQMP which was prepared to meet the California Clean Air Act requirements. Although the 1991 AQMP changes the attainment date to 2010, consistent with the 1990 Clean Air Act, it contains fewer Tier III measures than the 1989 plan, relying on the adoption of new motor vehicle controls by the California Air Resources Board which will result in cars by 2003 which are 80 percent cleaner than those sold in 1990. The CARB control program calls for 10 percent of new vehicles to be electric powered by 2003, the AQMP expands this goal to 50 percent.

The 1991 AQMP shifts the emphasis from job/housing balance to equivalent reductions in vehicle miles traveled. It continues to recommend air quality elements in general plans as the basis for implementing many of the local government measures, but differs the date of adoption to January 1993 and allows local governments to meet requirements through ordinances instead of general plan amendments. A variety of options, including job/housing balance, can be utilized by local governments to achieve the vehicle miles traveled reductions attributed to growth management. These must be in addition to other measures already required by the plan.

In response to positions developed by task forces of elected officials and representatives of various citizen and business organizations, the 1991 AQMP relies more heavily on market incentives than previous plans. These market incentives would be used for sources that are difficult to control by traditional command and control (specifying specific controls or emission controls on individual pieces of equipment or fuels and solvents) regulations. The intent is to shift consumer preference to lower polluting options, such as less polluting paints and coatings or gasoline and other fuels, by pricing mechanisms. In doing so, industry will take more individual responsibility for its actions, relying less on traditional command and control measures and enforcement than in the past.

Since the 1991 AQMP was prepared consistent with the California Clean Air Act, additional amendments will be required to make it consistent with the 1990 Federal Clean Air Act. This consistency is needed before the plan can be sent to EPA for incorporation in the State Implementation Plan (SIP).

Conformity Procedures

The EPA requires projects that receive federal funds to conform to the adopted SIP for the area, and plans prepared to meet federal Clean Air Act provisions must contain conformity provisions. In California, the California Environmental Quality Act (CEQA) Guidelines define non-conformity with locally adopted environmental plans, such as the AQMP and the SCAG Growth Management Plan, as a potentially significant impact.

Conformity demonstration procedures for the 1989 AQMP were defined as being applicable to all regionally significant projects, whether or not they were subject to federal funding restrictions. Projects subject to the procedures included capacity-enhancing wastewater treatment projects, as well as regionally

significant transportation and general development projects. Guidelines for demonstrating this conformity were developed by SCAG and approved by the SCAQMD and CARB. These Conformity Procedures have been continued for the 1991 AQMP.

General development projects subject to conformity review must demonstrate that they conform to the subregional job/housing balance goals established in SCAG's Growth Management Plan and incorporated in the AQMP or that they have implemented transportation demand measures that will achieve equivalent reductions in vehicle miles traveled. These measures must be in addition to all those otherwise required in the AQMP.

Initially, SCAG performs the conformity review for all applicable projects. Once a city or county has adopted an air quality element consistent with the AQMP, the local jurisdiction takes over the conformity monitoring, and SCAG review is no longer required. Once a local jurisdiction's general plan is found by SCAG to be consistent with the AQMP, the local government may assume responsibility for making its own conformity findings.

Each city or county is responsible for monitoring the cumulative impact of small projects within its jurisdiction to determine whether progress is being made towards achieving job/housing balance. As required by the California Clean Air Act, semiannual reports on local actions to implement the plan must be submitted to the Southern California Association of Governments (SCAG) and the South Coast Air Quality Management District (SCAQMD).

LOCAL POLLUTION SOURCES

The SCAQMD divides air pollutant sources into stationary and mobil sources.[5] These two sources contribute to decreased air quality in Murrieta and the entire South Coast Basin. Stationary sources (industrial facilities, construction sites, automotive services, dry cleaners, etc.) represent only a small portion of the air quality problem in the city while mobile sources (automobiles, trucks, motorcycles, airplanes, trains, etc.) represent by far the largest generator of air pollutants in Murrieta.

Stationary Sources

The South Coast Air Quality Management District (SCAQMD) has granted permits to operate to 59 stationary sources in the city of Murrieta.[6] These stationary sources include restaurants, dry cleaners, automotive services (including paint, body shops and gas stations), etc. According to the SCAQMD, of the 59 permits issued, all have negligible emissions inventory levels for criteria pollutants. There are no major source emitters in the city[7] As a result, emission levels for these minor uses do not show up on annual AQMD emission inventories.

Mobile Sources

Most of the air pollutant emissions in the South Coast Air Basin and city of Murrieta are generated by mobile sources on local freeways and local arterials. Cars, trucks, and buses combined account for approximately 87% of the CO emissions in the basin, 59% of NO_x emissions, 46% of ROG emissions, and 29% of SO_x emissions. Vehicle traffic also contributes to PM_{10} levels due to paved road dust.

Interstate 15 (I-15) and interstate 215 (I-215) are considered major sources of air pollution in the city. The average daily trips (ADT's) along I-15 range from 54,000 to 59,000 and from 36,500 to 39,000 along I-215 within the city limits. With an average speed of 55 miles-per-hour, these vehicles generate approximately 4.2 grams of carbon monoxide (CO), 0.4 grams of Reactive organic gases (ROG), 1.7 grams of nitrogen dioxides (NO_2) and 0.3 grams of particulate matter (PM_{10}) for every mile traveled.

SENSITIVE RECEPTORS

The most important reason for the establishment of air quality standards and plans is to reduce the likelihood of adverse health effects to the most sensitive members of the community. The term 'sensitive receptor' as used in this report refers to both the population groups concerned, and facilities (land use categories) where such groups are likely to reside or spend a substantial amount of time. Table 3.10-15 shows sensitive air quality receptor groups and the land use categories associated with them. Figure 3.10-7 shows the location of sensitive receptors in the city of Murrieta.

TABLE 3.10-5
SENSITIVE RECEPTORS OF AIR CONTAMINANTS

Receptor Group	*Land Use Category*
Children	residences, schools, playgrounds, child care centers
Elderly	residences, retirement homes, convalescent homes
Acutely ill	hospitals, clinics
Chronically ill	convalescent homes, residences

Source: Bay Area Association of Governments

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

SENSITIVE RECEPTORS

FIGURE 3.10-7

ENDNOTES

1. Keith, R.W., A Climatological/Air Quality Profile of California South Coast Air Basin, 1980.

2. U.S. National Oceanic and Atmospheric Administration, Climatography of the United States, 1972.

3. Temperatures normally decrease with altitude and a reversal of this atmospheric state, where temperature increases with altitude, is called inversion.

4. SCAQMD, Summary of 1989 AQMP, *The Path to Clean Air.*

5. South Coast Air Quality Management District, Final Air Quality Management Plan Executive Summary.

6. South Coast Air Quality Management District, Chief Prosecutor's Office, Public Records Unit, August 1992.

7. Phone conversation with Stewart Muller of the SCAQMD, 10-6-92.

NOISE

SECTION 3.11

3.11 NOISE

INTRODUCTION

This section of the MEA presents a general description and characterization of the community noise environment in the city of Murrieta. The existing noise environment in the city and compatible noise levels for various land uses are described and discussed, and sensitive receptors are identified and mapped. Noise contours from existing noise sources are also discussed and illustrated.

TERMINOLOGY

Community noise levels are measured in terms of the "A-weighted decibel," abbreviated dBA. A-weighted is a frequency correction that correlates overall sound pressure levels with the frequency response of the human ear. Additional units of measurements have been developed to evaluate the longer term characteristics of sound. Several rating scales have been developed for describing noise exposure over a long period of time (time-averaged measurement). The three most commonly used descriptors are the energy equivalent noise level (L_{eq}), the day-night average noise level (L_{dn}), and the Community Noise Equivalent Level (CNEL).

L_{eq} is a measure of the average energy content (intensity) of noise over any given period of time. The L_{eq} value for one hour is therefore the average noise based on the acoustic energy content of the sound rather than the average sound pressure level. It can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. L_{eq} is not measured directly but rather calculated from sound pressure levels measured in dBA. A-weighted decibels is the unit of measurement for both the L_{dn} and CNEL scales.[1]

L_{dn} is the summation of hourly L_{eq} readings over a 24-hour period using a time weighted noise scale. This time weighted scale adds a 10 dBA "penalty" to nighttime noise levels (10 PM to 7 AM) to account for the greater sensitivity of people to noise during the night.[2] The predominant rating scale now in use throughout California for land use compatibility assessment is the CNEL scale, which represents a time weighted 24-hour average noise level. Like the L_{dn} standard, CNEL adds a 10 dBA penalty for noise occurring between 10 PM and 7 AM. In addition, CNEL adds 5 dBA penalty for the evening time period (7 PM to 10 PM).

The following summarizes noise descriptors commonly used in assessing noise impacts:

Ambient — When used in connection with sound level, refers to the prevailing background noise, exclusive of a particular intruding sound under consideration.

L_{eq} — Equivalent sound level; dBA values averaged on an energy basis over a stated time period.

$L_{eq}(_{24})$ — The L_{eq} of a 24-hour period.

L50 — The A-weighted sound level exceeded 50 percent of the sample time, the median sound level.

L_{dn} — Day-night average sound level: same as $L_{eq}(24)$ except that the nighttime (10:00 PM to 7:00 AM) levels are weighted by 10 dB, reflecting a person's increased sensitivity to noise at night. (A 10 dB increase is judged twice as loud.) L_{dn} (or CNEL) is the parameter normally used by the EPA, the state, and local governments to define acceptable levels of noise.

CNEL — Community Noise Equivalent Level; same as L_{dn} except in addition to the 10 dB night-time weighting, the evening (7:00 PM to 10:00 PM) levels are weighted by 5 dB. For most situations, the L_{dn} and CNEL will be equal within a fraction of a dB, and may be considered synonymous.

Contour — When used in connection with noise, refers to a line of constant sound level; similar to contours of constant elevation on a geologic map.

Decibel — (dB) is a unit of sound pressure (P) denoting the logarithm (to the base 10) of the ratio between the total instantaneous pressure (Pi) at a particular point in the presence of a sound wave minus the static pressure (Pa) at that point to a reference pressure (Po). Mathematically, L (dB) = 20 $\log_{10}$ (P/Po) where P = Pi - Pa.

dBA — A measure of sound level; the "dB" denotes decibels, the "A" denotes a weighting that results in a noise measurement which approximates the frequency response of the human ear.

EFFECTS OF NOISE

The human response to environmental noise is subjective and varies considerably from individual to individual. The effect of noise can range from interference with sleep, concentration, and communication, to physiological and psychological stress, and at the highest intensity levels, hearing loss. Table 3.11-1 provides noise levels of various point sources and environments and shows the average human response to these levels. Each of the potential human reactions to noise is briefly discussed below.

TABLE 3.11-1
SOUND LEVELS AND HUMAN RESPONSE

Source/Environment	dBA	Average Human Response
Civil Defense Siren 100 ft	140	Physically Painful
	135	
Military Jet Takeoff at 50 feet	130	
	125	
Jet Takeoff at 200 feet	120	Discomforting
Auto Horn at 3 feet	115	
Rock Music Concert	110	
Power Mower at 3 feet	105	Hearing Damage
Garbage Truck	100	Very Loud
	95	
Motorcycle at 25 feet	90	
	85	
Freight Train at 50 feet	80	
Freeway Traffic at 50 feet	75	
	70	Moderately Loud
	65	
	60	Intrusive
Normal Conversation at 5 feet	55	
	50	Quiet
Average Office	45	
	40	
	35	
Library	30	Very Quiet
Soft Whisper at 15 feet	25	
	20	
	15	
	10	Just Audible
Leaves Rustling	5	
	0	Threshold of Hearing

Sources: *Handbook of Noise Measurement*, by Arnold P.G. Peterson and Ervin E. Gross, Jr., 1963; William Bronson, "Ear Pollution," California Health (October 1971); Federal Highway Administration.

HEARING LOSS is not a concern in typical community noise problems. The potential for noise-induced hearing loss is more commonly associated with occupational noise exposures in heavy industry. Noise levels in neighborhoods, even in very noisy airport environments, is not loud enough to cause hearing loss.

SPEECH INTERFERENCE is one of the primary concerns of environmental noise. Normal conversational speech is in the range of 60-65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener, as well as the speaker voice level.

SLEEP INTERFERENCE from traffic noise is a common concern. Sleep disturbance studies have identified interior noise levels that have the potential to cause sleep disturbance. Sleep disturbance does not necessarily mean awakening from sleep, but can also refer to altering the pattern and stages of sleep.

PHYSIOLOGICAL RESPONSES are those measurable effects of noise on people such as changes in pulse rate and blood pressure. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are signs of harm.

ANNOYANCE is the most difficult of all noise responses to describe and analyze. Annoyance is a very individual characteristic and can vary widely from person to person. The sound that one person considers tolerable can be quite unbearable to another person of equal hearing capability.

REGULATORY BACKGROUND

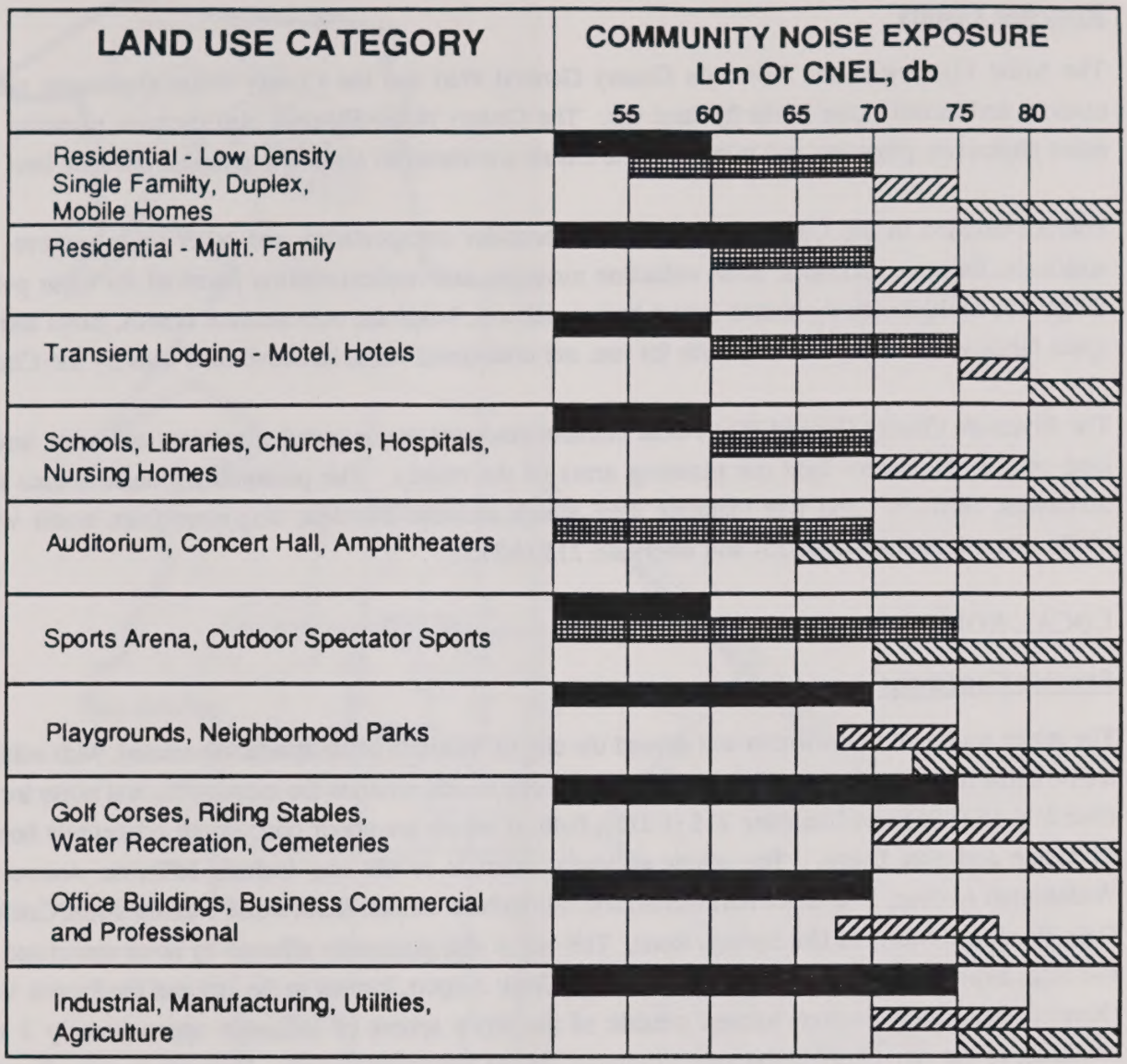
State of California

In order to limit human exposure to physically and/or psychologically damaging noise levels, the State of California, through the State General Plan Guidelines (Government Code Section 65302 (f) requires that cities include a noise element in their general plans. Consistent with this requirement, various county governments and most municipalities have established standards and ordinances to control noise. The California Department of Health Services (DHS) Office of Noise Control has studied the correlation of noise levels and their effects on different land uses. As a result, the DHS has established four categories for judging the severity of noise intrusion on specified land uses. These four categories are presented in Table 3.11-2.[3]

Noise in the "normally acceptable" range places no undue burden on affected receptors and would need no mitigation. As noise rises into the "conditionally acceptable" range, some mitigation of exposure, as established by an acoustic study, would be warranted. At the next level, noise intrusion is so severe that it is classified "normally unacceptable" and would require extraordinary noise reduction measures to avoid disruption. Finally, noise in the "clearly unacceptable" range is so severe that it cannot be mitigated.

The California Noise Insulation Standards require that interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. Residential buildings or structures to be located within exterior CNEL contours of 60 dB or greater of an existing or proposed freeway, major thoroughfare, rail line, rapid transit line, or industrial noise source require an acoustical analysis showing that the building has been designed to limit intruding noise to an interior CNEL of 45 dB.

TABLE 3.11-2
LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS



NORMALLY ACCEPTABLE
Specified land use is satisfactory, based upon the assumption that any buildings involved area of normal conventional construction, without any special noise isulation requirements.

CONDITIONALLY ACCEPTABLE
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

NORMALLY UNACCEPTABLE
New construction of development should be discourage. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE
New construction or development clearly should not be undertaken.

Step 12
A major objective of the noise element is to utilize this information to insure compatible land use planning:
The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise. (Government Code Section 65302(f))

SOURCE: State of California General Plan Guidelines, Office of Planning and Research June 1990

Riverside County

The Noise Element of the Riverside County General Plan and the County Noise Ordinance establish outdoor and indoor noise limits by land use. The County Noise Element also contains planning areas, noise objectives, programs and mitigations to ensure a compatible noise environment between land uses.[4]

Policies detailed in the County Noise Element consider transportation and other noise sources, noise standards, sensitive receptors, noise reduction measures and implementation potential for these policies. Single and multiple family homes, group homes, schools, hospitals, convalescent homes, parks and open space lands where quietness is a basis for use, are considered noise sensitive land uses by the County.

The Riverside County General Plan Noise Element discusses major sound generators and noise sensitive land uses in the twelve land use planning areas of the county. The predominant noise source in the Southwest Territory Land Use Planning area, which includes Murrieta, originates from motor vehicle traffic along Interstate 15 (I-15) and Interstate 215 (I-215).

LOCAL NOISE SOURCES

Existing Conditions

The major source of noise within and around the city of Murrieta is transportation-related, with vehicular traffic being most significant. The roadways in the city which generate the most traffic and noise include: Interstate 15 (I-15) and Interstate 215 (I-215), both of which are major north-south connectors between Riverside and San Diego. The major east-west arterials in the city include Jefferson Avenue and Washington Avenue. The major north-south arterials include Clinton Keith Road, Kalmia Street/California Oaks Road, and Murrieta Hot Springs Road. The city is also minimally affected by noise associated with two local airports; the small privately owned Bear Creek Airport, located in the city and the French Valley (Rancho California) Airport, located outside of the city's sphere of influence approximately 2 miles southeast of the city limits in the unincorporated area of Riverside County. Murrieta is also affected to a lesser extent by short-term noise sources, such as construction activities, and by stationary noise primarily associated with industrial facilities.

The noise environment for Murrieta can be described using noise contours developed for the major noise sources within the city. Existing noise contours for the city have been estimated based on the Federal Highway Administration (FHA) Highway Noise Model and existing traffic volumes provided by Kahn and Kain Associates (Figure 3.11-1). The noise contours are used to identify areas of existing or potential noise impacts. CNEL contour levels of 60dB, 65dB, and 70dB are shown on the map. Any existing or proposed land uses within a 65 dB to 70 dB CNEL contour should be considered for noise mitigation programs. For example, within the 60 dB CNEL contour, any proposed noise sensitive land uses should be evaluated on a project specific basis and may require mitigation to meet city or state standards. Within the 65dB to 70dB CNEL residential development should be carefully reviewed to ensure that proper mitigation is included in projects in order to meet California Noise Insulation Standards for maximum interior noise levels of 45 dB.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Existing CNEL Noise Contours

FIGURE 3.11-1

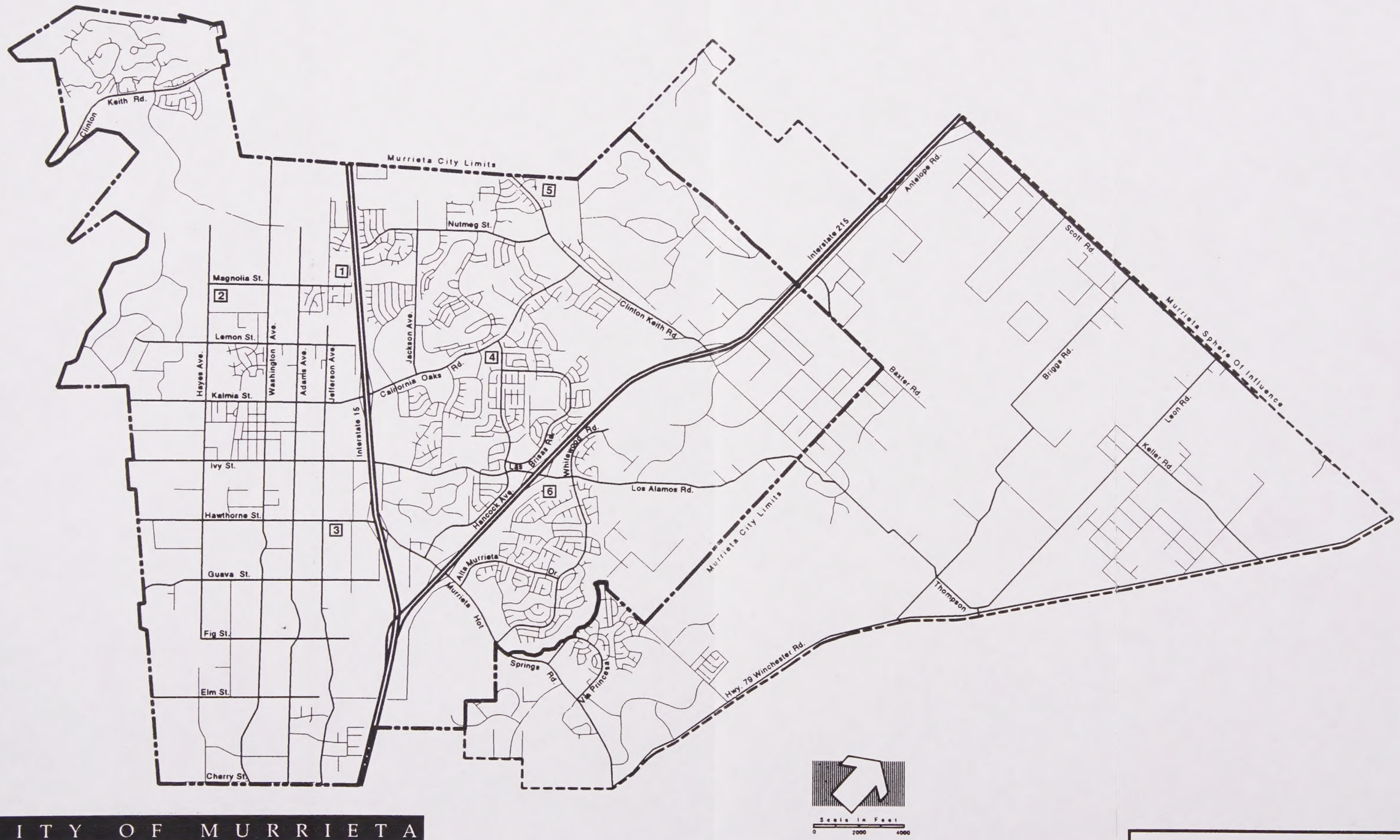
Local Ambient Noise Monitoring

On July 22, 1992 noise measurements were taken at six different locations in the City using a Quest M-28 Noise Logging Dosimeter. The sites were randomly selected throughout the city in an attempt to verify major noise sources in the city and to verify the noise contours modeled from traffic volumes. The locations of the monitoring sites are shown in Figure 3.11-2. Short-term (15 minute Leq) noise measurements were taken to determine existing ambient noise levels at these locations. One of the advantages of on-site monitoring over computer modeling is that noise meters account for all noise sources and barrier attenuation effects (i.e. walls, landscaping, terrain, etc.), computer modeling generally does not. This information can help provide the basis for developing future community noise standards. The noise monitoring result are shown in Table 3.11-3.

TABLE 3.11-3
NOISE MONITORING RESULTS

Location	Time	Noise Level (dBA)
1. On eastern curb of new residential street, approximately 150 feet west of I-15 (65 mph speed limit), no sound wall along I-15 or line of homes on east side of street, traffic volume on I-15 at this time is about 4,300 vehicle per hour, no vehicle pass-bys on residential street	11:02 a.m.	62
2. Magnolia St./Hayes Ave., about 300 feet from Bear Creek Airport, construction noise in distant background, no takeoffs/landings, no vehicle pass-bys	11:30 a.m.	56
3. Murrieta Hot Springs Rd./Jefferson Ave., on shoulder of Murrieta Hot Springs Rd., 15 feet from centerline, traffic volume on Murrieta Hot Springs Rd. is about 600 vehicles per hour, noise is characterized by acceleration/ deceleration	11:55 a.m.	67
4. California Oaks Rd., at curb near Fire Station, 25 feet from centerline, residential on both sides of street, wall protecting residences on north side	1:20 p.m.	66
5. Spindle/Copper Craft, quiet residential, some general population noise, 2 car drive-bys	1:45 p.m.	54
6. Acacias Ave., about 500 feet east of I-215, very light traffic on Acracias- vehicles pass by at a rate of about 150 cars per hour, residential units line east side of street, no developments between measurement site and I-215	2:15 p.m.	65

Source: EIP Associates, July 22, 1992.

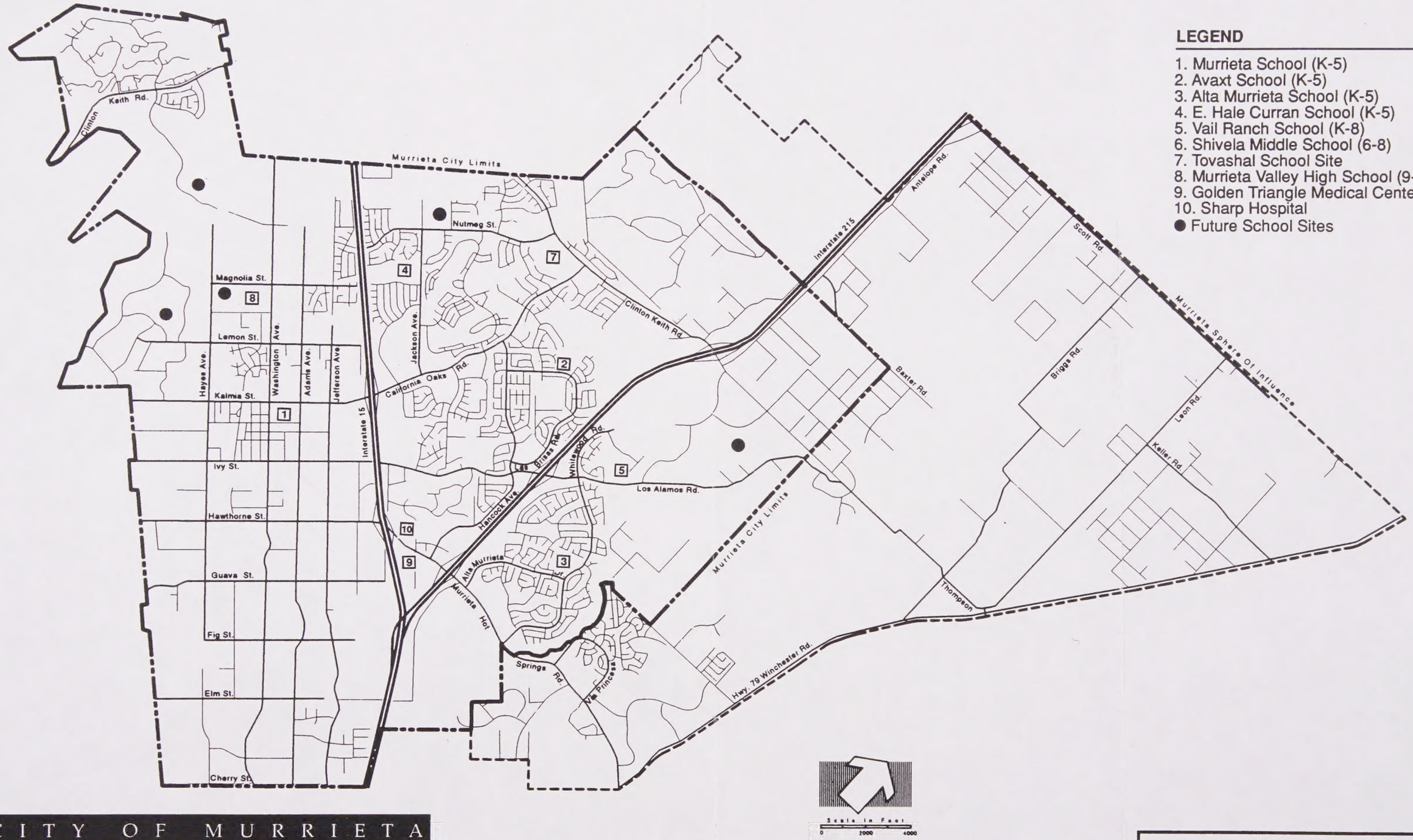


CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Noise Monitoring Locations

FIGURE 3.11-2



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Noise Sensitive Receptors

FIGURE 3.11-3

Mobile Noise Sources

Motor Vehicle Noise

Motor vehicle noise is the most common and widely dispersed noise source in the city of Murrieta. Increases in noise from motor vehicles are directly related to increases in traffic volume and speed. Noise impacts from traffic reach their highest levels during the AM peak period (6-9 AM) and the PM peak period (4-7 PM). Because attenuation effects vary considerably on the local environment (i.e., soundwalls, buildings, hills, etc.), noise levels were estimated at the approximate shoulder of the roadway, 50 feet from the median. Without barriers, noise from moving vehicles normally drops off by approximately 3 to 4.5 dBA with each doubling of distance.[5] The general contours shown in Figure 3.11-1 illustrate the impacts of vehicular noise from the I-15 and I-215 freeways on areas in the city. Table 3.11-4 illustrates how various variables (i.e., speed, volume, and vehicle mix) affect traffic noise levels.

Based on the FHWA Highway Noise Prediction Model and 1992 traffic volume estimates, existing vehicular traffic noise levels throughout Murrieta have been estimated. Most of the land uses along the major and secondary roadways in Murrieta are residential. As shown in Table 3.11-5, noise levels range from 61 CNEL along Adams Ave and Hayes Ave. to 79 CNEL along I-15 between Clinton Keith Rd. and the I-215 junction. Residential land uses located along both freeway corridors are subject to noise levels above the normally acceptable level of 65 CNEL.

TABLE 3.11-4
TYPICAL TRAFFIC NOISE LEVELS
Peak Hour Noise Level (dBA, Leq)[1, 2]

Peak Hour Traffic Volume	Speed (miles per hour)								
	10	15	20	25	30	35	45	55	65
500	56/57	57/58	58/59	59/60	60/61	61/62	63/64	65/66	67/68
1,000	59/60	60/61	61/62	62/63	63/64	64/65	66/67	68/69	70/71
2,000	62/63	63/64	64/65	65/66	66/67	67/68	69/70	71/72	73/74
4,000	65/66	66/67	67/68	68/69	69/70	70/71	72/73	74/75	76/77
8,000	68/69	69/70	70/71	71/72	72/73	73/74	75/76	77/78	79/80
16,000	71/72	72/73	73/74	74/75	75/76	76/77	78/79	80/81	82/83
32,000	74/75	75/76	76/77	77/78	78/79	79/80	81/82	83/84	85/86

1. 100 feet from the centerline of the roadway.
2. The first number is the noise level with 4% trucks (a typical traffic mix for arterial streets); the second number is the noise level with 7% trucks (a typical traffic mix for freeways).

Source: Federal Highway Administration

TABLE 3.11-5
EXISTING ROADSIDE NOISE LEVELS/CNEL CONTOUR DISTANCES
City of Murrieta - 1992

Roadway Segment	ADT	Speed	Noise Level 50 feet from centerline (dBA)[1]	Distance to CNEL Contour (feet)[2]		
				70	65	60
I-15 (between)						
Clinton Keith Rd./Kalmia St.	59,000	55	79	199	429	924
Kalmia St. (California Oaks Rd.)/Hawthorn St. (Murrieta Hot Springs Rd.)	58,000	55	79	199	429	924
Hawthorn St. (Murrieta Hot Springs Rd.)/I-215 (Junction)	54,000	55	79	199	429	924
Jefferson Ave. (between)						
Nutmeg St./Hawthorn St.	8,365	35	66	27	58	126
Hawthorn St./Rancon Cent. Blvd.	8,216	35	66	27	58	126
Adams Ave.	369	35	61	13	27	58
Washington Ave. (between)						
City Limits/Clinton Keith Rd.	3,976	45	65	23	50	108
Clinton Keith Rd./Magnolia	3,703	45	65	23	50	108
Magnolia/Guava St.	1,316	45	64	20	43	92
Guava St./Rancon Center Blvd.	343	45	63	17	37	79
Hayes Ave.	403	35	61	13	27	58
Clinton Keith Rd. (between)						
I-15/Washington Ave.	6,271	45	67	32	68	146
I-15/California Oaks Rd.	4,458	45	66	27	58	126
California Oaks/I-215	3,694	45	65	23	50	108
I-215/Antelope Rd.	688	45	63	17	37	79
Nutmeg St. (between)						
Jefferson Ave./Clinton Keith Rd.	1,284	35	62	15	32	68
California Oaks Rd. (between)						
I-15/Falconer Dr.	14,542	45	70	50	108	232
Falconer Dr./Clinton Keith Rd.	2,764	45	65	23	50	108
Kalmia St. (between)						
I-15/City Limits	8,178	45	68	37	79	171

TABLE 3.11-5
EXISTING ROADSIDE NOISE LEVELS/CNEL CONTOUR DISTANCES
City of Murrieta - 1992

Roadway Segment	ADT	Speed	Noise Level 50 feet from centerline (dBA)[1]	Distance to CNEL Contour (feet)[2]		
				70	65	60
Ivy St. (between)						
I-15/Hayes Ave.	4,723	45	66	27	58	126
I-15/I-215	10,187	45	69	43	92	199
Los Alamos Rd. (between)						
I-215/Whitewood Rd.	8,337	45	68	37	79	171
Whitewood Rd./City Limits	1,244	45	64	20	43	92
Hawthorn St. (between)						
I-15/Washington Ave.	6,004	35	65	23	50	108
I-15/Hancock Ave.	10,925	35	67	32	68	146
Hancock Ave./I-215	10,614	35	67	32	68	146
Murrieta Hot Springs Rd. (between)						
I-215/Del Lago	20,038	45	72	68	146	316
Prielipp Rd. (between)						
Inland Valley Dr./Nutmeg St.	2,628	35	63	17	37	79
I-215 (between)						
Baxter Rd./Clinton Keith Rd.	36,500	55	77	146	316	680
Clinton Keith Rd./Los Angeles Rd.	36,000	55	77	146	316	680
Los Alamos Rd./Murrieta Hot Springs Rd.	38,000	55	78	171	368	792
Murrieta Hot Springs Rd./I-15 Junction	39,000	55	78	171	368	792
Antelope Rd. (between)						
Clinton Keith Rd./Baxter Rd.	666	45	63	17	37	79
Whitewood Rd. (between)						
Los Alamos Rd./Murrieta Hot Springs Rd.	3,604	35	63	17	37	79
Blackthorne Dr. (between)						
Whitewood Rd./Alta Murrieta Dr.	1,332	35	62	15	32	68

1 Community Noise Equivalent (CNEL)
2 Distance from centerline of roadway to 70, 65, and 60 CNEL contours

Sources: Robert Kahn, John Kain & Associates, Inc. 1992 Traffic Summaries; FHWA Highway Traffic Noise Prediction Model, U.S. Department of Transportation, Dec. 1978

Freeway Noise

The city is traversed by Interstate 15 (I-15) and Interstate 215 (I-215). Freeway traffic tends to produce greater and more constant noise levels due to high traffic volumes and speeds, as opposed to local streets which are characterized by less constant acceleration noise due to traffic signals and stop signs. Interstate 15 (I-15) and Interstate 215 (I-215) are the most significant sources of noise in the city (Ref. Table 3.11-5). Caltrans estimates that the peak hour traffic volume on I-15 between I-215 (junction) at 4,150 vehicles. Using Federal Highway Administration factors (Table 3.11-4), this traffic volume correlates to a noise level of approximately 77 dBA at 100 feet from the centerline of the roadway. Caltrans estimates that the peak hour traffic volume on I-215 between Murrieta Hot Springs Road and Los Alamos Road at 3,250 vehicles. Based on Federal Highway Administration factors (Table 3.11-4), this traffic volume correlates to a noise level of about 74 dBA at 100 feet from the centerline of the roadway.[6]

Truck Traffic

Truck traffic along I-15 at the I-215 junction accounts for 17 percent of the total vehicular traffic. I-215 has a similar truck mix, approximately 17.5 percent near the I-15 interchange. This represents a very high truck traffic mix which accounts for greater noise levels than are expected from typical freeway volumes (according to the Federal Highway Administration 7 percent is typical). Another important factor contributing to higher noise levels is the 65 mph speed limit along this route.

Arterial Traffic

Mass transportation systems (i.e. bus routes, trains) and truck traffic can place heavy demands on local arterials. To preserve tranquility and quality of life in residential areas, circulation plans should divert truck and through traffic away from residential streets. Although major freeways (e.g., I-15 and I-215) can produce higher noise levels, major and minor arterials (e.g., Clinton Keith Rd., California Oaks Rd., Jefferson Ave., Washington Ave.) can often produce more significant noise impacts due to the close proximity of sensitive receptors. As shown in Table 3.11-5 arterial roadways currently range from a low of 61 CNEL along Adams and Hayes Avenues to a high of 70 CNEL along California Oaks Road between I-15 and Falconer Dr. The range of noise levels shown in Table 3.11-5 are typical for an urbanizing area.

Aircraft Noise

Unlike highway-generated noise, which tends to maintain a constant level of noise, airport noise levels are more periodic in nature. Although impacts are somewhat predictable due to the set time tables that dictate aircraft travel, a relatively busy airport can have varying levels of noise impacts almost constantly. Due to the relatively short duration of noise from a single airplane, noise impacts are typically based on the number of aircraft operations within a given period of time rather than the effects of individual occurrences.

There are two airports in or near the city of Murrieta; the Bear Creek Airport and the French Valley Airport. The Bear Creek Airport (Thompson Flying Center), located in the city of Murrieta approximately

300 feet from the intersection of Magnolia Street and Hayes Avenue, is a small privately owned airport (with a dirt runway) which provides limited general aviation service, mostly recreational in nature, to area residents. The French Valley Airport (Rancho California Airport), located approximately 2 miles southeast of the city limits and just outside of the city's sphere of influence in Riverside County, is a much larger more active airport catering to a variety of aircraft including single and multi-engine aircraft, small business jets and helicopters. Aircraft currently take off in the southerly direction over residences in the northern section of the city of Temecula. While aircraft flyovers are occasionally heard in some areas of Murrieta, aircraft do not account for a significant source of noise.

Consistent with Section 21675 of the State of California Public Utilities Code, the Riverside County Airport Land Use Commission has prepared a Comprehensive Land Use Plan for French Valley Airport (FVALUP). The FVALUP is generally intended to provide for the orderly growth of the airport while safeguarding the general welfare of the public within the airports influence area. The FVALUP assesses existing and projected noise levels for the airport. Existing "1990" noise contours show only a small portion of the city's sphere of influence located within the airports 55-60 CNEL noise contours. Within the 55-60 CNEL area the potential for annoyance exists, however, according to the plan, mitigation is not required (see Table 3.11-6). The future "2000" noise contours show a larger area of the sphere within the 55-60 CNEL contours, and a small area within the proposed Boreal Airpark Specific Plan within the 60 to 65 CNEL contour. Residential uses within the 65 to 70 CNEL contours typically require acoustical reports and mitigation for noise reduction. There are no restrictions for other land uses within the 65-70 CNEL contours. Currently existing and proposed land uses in the noise affected areas are not considered incompatible with future operation of the airport.[7]

TABLE 3.11-6
AIRPORT LAND USE GUIDELINES FOR NOISE COMPATIBILITY

Type of Airport/ Land Use	55-60 CNEL	60-65 CNEL	65-70 CNEL	70-75 CNEL
General Aviation				
Residential/ Lodgings	■ Potential for annoyance exists; identify high complaint areas. ■ Determine whether sound insulation requirements should be established for these areas. ■ Noise easements should be required for new construction. ■ Discourage residential use underneath the flight pattern.	■ Discourage new single family dwellings. ■ Prohibit mobile homes. ■ New construction or development should be undertaken only after analysis of noise reduction and requirements is made and needed noise insulation is included in the design	■ New construction or development of residential uses should not be undertaken ■ New hotels and motels may be permitted after an analysis of noise reduction requirements is made and needed noise insulation is included in the design.	■ New hotels and motels should be discouraged.
All Airports				
Public/ Institutional		■ Satisfactory with little noise impact and requiring no special noise insulation requirements for new construction	■ Discourage institutional uses. ■ If no other alternative location is available, new construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed noise insulation is included in the design.	■ No new institutional uses should be undertaken.

TABLE 3.11-6
AIRPORT LAND USE GUIDELINES FOR NOISE COMPATIBILITY

Type of Airport/ Land Use	55-60 CNEL	60-65 CNEL	65-70 CNEL	70-75 CNEL
Commercial			■ Satisfactory with little noise impact and requiring no special noise insulation. Requirement for new construction.	■ New construction or development should be undertaken only after an analysis of noise reduction requirements is made and needed insulation features included in the design. Noise reduction levels of 25-30 dB will be required.
Industrial				■ Satisfactory with little noise impact and requiring no special noise insulation. Requirement for new construction.
Recreation/ Open Space			■ Satisfactory with little noise impact and requiring no special noise insulation. Requirement for new construction. ■ Outdoor music shells and amphitheater should not be permitted.	■ Parks, spectator sports, golf courses and agricultural generally satisfactory with little noise impact. ■ Nature areas for wildlife and zoos should not be permitted.

Source: Airport Land Use Planning Handbook, A Reference Guide for Local Agencies, prepared for California Department of Transportation, Division of by Metropolitan Transportation Commission and Association of Bay Area Government, 1983, p. 50

Stationary Noise Sources

The most common sources of stationary noise include construction noise, industrial noise and neighborhood noise. Since stationary noise sources are localized, estimates of intensity and abatement needs can be accurately estimated. Noise from localized sources typically falls off by about 6 dBA with each doubling of distance from source to receptor (i.e., noise levels from ground clearing for residential construction would be about 85 dBA at 50 feet from the site, 79 dBA at 100 feet from the site, 73 dBA at 200 feet from the site, etc.).[8]

Construction Noise

Construction noise represents a short-term impact on ambient noise levels. A listing of typical construction equipment noise levels is presented in Table 3.11-7. Noise generated by construction equipment can often reach high episodic levels. Pile drivers, drills, trucks, pavers, and a variety of other equipment can create extremely high noise levels, but usually for short, sporadic periods of time. Since noise from localized sources typically falls off by about 6 dBA with each doubling of distance from source to receptor, receptors located within about 1,400 feet of a construction site would experience outdoor noise levels greater than 60 dBA during the noisiest phases of construction. Noise associated with construction can often disturb the concentration and communication of nearby residents and pedestrians.

Noise emanating from construction and maintenance equipment in the city of Murrieta is currently controlled by Riverside County Ordinance No. 457.75 (G,1), adopted by the city, which limits construction to the hours of 6 a.m. to 6 p.m. during the months of June through September, and between the hours of 7 a.m. to 6 p.m. during the months of October through May.

TABLE 3.11-7
TYPICAL CONSTRUCTION EQUIPMENT NOISE (dBA)

Equipment Type		Noise Level at 50 feet: Without Noise Control	Noise Level at 50 feet: With Feasible[1] Noise Control
EARTHMOVING	Front Loaders	79	75
	Backhoes	85	75
	Bulldozers	80	75
	Tractors	80	75
	Scrapers	88	80
	Graders	85	75
	Trucks	91	75
	Pavers	89	80
MATERIALS HANDLING	Concrete Mixers	85	75
	Concrete Pumps	82	75
	Cranes	83	75
	Derricks	88	75
STATIONARY	Pumps	76	75
	Generators	78	75
	Compressors	81	75
IMPACT	Pile Drivers	101	95
	Jack Hammers	88	75
	Rock Drills	98	80
	Pneumatic Tools	86	80
OTHER	Saws	78	75
	Vibrators	76	75

[1]Estimated levels obtainable by selection of quieter procedures or machines and implementing noise control features requiring no major redesign or extreme cost.

Source: *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*, Bolt, Beranek, and Newman, U.S. Environmental Protection Agency, December 31, 1971.

Industrial Noise

Industrial noise is generated by various processing and manufacturing activities. This type of noise is generally limited to the immediate source area and does not impact sensitive receptors unless there is an incompatible mix of land uses close to the source. Proper planning, enforcement of zoning regulations, and noise ordinances are typically sufficient to prevent industrial uses from becoming a nuisance.

NOISE SENSITIVE RECEPTORS

Planning for land use compatibility requires that sensitive receptors be identified and that land uses be sited to support acceptable interior and exterior noise levels. Where siting cannot achieve acceptable noise

levels, development may be deemed appropriate if mitigation techniques such as soundwalls and insulating building materials can be employed to reduce noise to acceptable levels. Some types of land uses are inherently more sensitive to ambient noise levels due to both activities involved with these land uses and the amount of insulation from and exposure to various noise levels. These sensitive receptors include residences, hospitals, nursing homes, schools libraries, motels and hotels, and outdoor recreational areas.[9]

Land uses in Murrieta that are sensitive to intrusive noise include: residential areas (especially those along I-15 and I-215), schools, a convalescent care facility (The Golden Triangle Medical Center), and a hospital (Sharp Health Care). Figure 3.11-3 shows the location of sensitive receptors in Murrieta. The 65 CNEL is generally considered the maximum exterior level acceptable for these uses. Sensitive land uses are permitted in areas with ambient noise levels in excess of 65 CNEL if mitigation is provided to reduce interior noise to levels below 45 dB.

Several residential tracts in the city have been built or are proposed directly adjacent to I-15 and I-215. These areas may experience excessive noise levels due to the high level of car and truck traffic along both routes (over 65 CNEL). If these developments are not built with protective noise barriers, exposure could be considered excessive.

ENDNOTES

1. EIR Manual for Private Projects, City of Los Angeles, August 1975, p. N10.

2. EIR Manual for Private Projects, City of Los Angeles, August 1975, p. N2.

3. State of California, General Plan Guidelines, 1990.

4. Noise Element, Riverside County General Plan, December 1986.

5. Federal Highway Administration (FHWA), 1978.

6. Caltrans. 1989 Traffic Volumes on California State Highways.

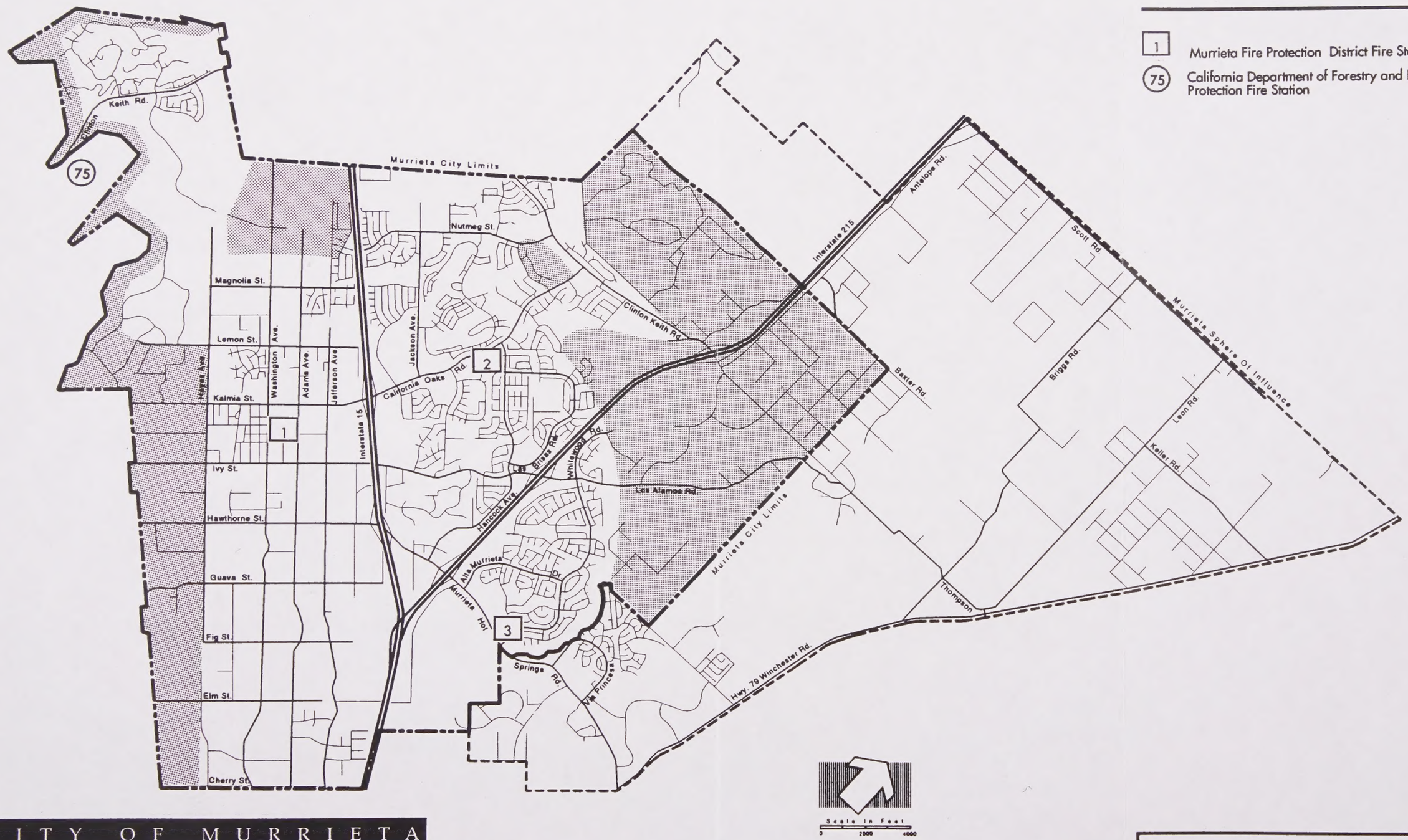
7. County of Riverside Airport Land Use Commission, French Valley Airport Comprehensive Land Use Plan Working Paper II, August, 1992.

8. Federal Highway Administration (FHWA), 1978.

9. State of California, General Plan Guidelines, 1990.

HEALTH AND SAFETY (RISK OF UPSET)

SECTION 3.12



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Wildland Fire Protection Agreement Areas

FIGURE 3.12-1

TABLE 3.12-1
CALIFORNIA DIVISION OF FORESTRY AND FIRE PROTECTION STATION LOCATIONS, EQUIPMENT, AND STAFFING

LOCATION	STAFFING	EQUIPMENT
Station 75 38900 Clinton Keith Road Murrieta	2 firefighters per shift	2 Engines, and 1 USFS Engine during fire season
Station 73 27415 Enterprise Circle West Temecula	7 firefighters per shift 1 battalion chief	2 Engines, 1 - 100 foot aerial platform unit, 1 light & air vehicle
Station 12 28330 Mercedes Temecula	3 firefighters per shift 5 firefighters in high fire season	2 Engines, 2 Brush Trucks, 1 - volunteer rescue squad

Source: California Department of Forestry and Fire Protection, September, 1992.

The MFPD maintains a Fuel Modification Plan which contains policies to guide development in wildland fire areas. Specific policies focusing on site planning (set backs and access), architecture (roof design and materials), and landscaping (plant type and maintenance), are provided for the following fuel modification zones:

FUEL MODIFICATION ZONE I - GRASSLAND/OAK CANOPY
FUEL MODIFICATION ZONE II - GRASSLAND
FUEL MODIFICATION ZONE III - CHAPARRAL

The Fuel Modification Plan also includes three plant lists specifying high and moderate fire hazard species and high and moderate fire retardant species. These plant lists are provided to guide the use of appropriate landscaping within the identified fuel modification zones.

URBAN FIRES

Urban development in the city of Murrieta generally does not pose any unusual hazards or the need for specialized response such as that which would be required if the city contained a greater concentration of high-rise structures and large industrial complexes. The greatest concerns within the more urban areas of the city focus on the increase in light industry and the potential for transportation fires involving hazardous materials along Interstate 15 and 215.

HAZARDOUS MATERIALS

State Assembly Bill 2948 (Chapter 1504 of the Statutes of 1986) authorized preparation of countywide hazardous waste management plans to minimize the generation of hazardous wastes. In 1987, the Riverside County Board of Supervisors directed preparation of the Riverside County Hazardous Waste Management Plan (CHWMP) which was ultimately adopted in June of 1989. Effective implementation

of the Plan depends on the cooperation of local governments and communities. To implement the plan at the local level, cities within the county are required by state law to incorporate the county plan provisions into their general plans and/or ordinances. Options available to the City in fulfilling this requirement are summarized as follows:

- Adopt a City Hazardous Waste Management Plan that is consistent with the CHWMP and contains all of the state required elements (per California Health and Safety Code, Section 25135.1(d)).

- Incorporate pertinent portions of the CHWMP by reference into the city's General Plan.

- Adopt an ordinance which requires that all applicable zoning, subdivision, conditional use permits, and variance decisions are consistent with the portions of the CHWMP which identify general areas or siting criteria for hazardous waste facilities.

Currently there are 24 businesses in the city of Murrieta that incorporate hazardous materials into their production or service processes, and 27 businesses that generate hazardous waste. The majority of these businesses include automotive services, dry cleaners, photoprocessing, medical services, printing and lithography. Potential hazards associated with hazardous materials include fires, explosions and leaks. Where hazardous substances leach through the soil and reach groundwater, it can present a threat to human health, as can exposure to noxious gases or skin contact with specific toxins.

Hazardous Waste Sites

A number of state and federal agencies monitor hazardous materials and hazardous waste facilities. The two primary agencies who monitor and document potential and known contamination sites are the California Department of Health Services and the Regional Water Quality Control Board. The California section of the Environmental Protection Agency conducted a comprehensive data base search of the study area on October 21, 1992. The search, which includes the records of all major agencies who monitor and document potential and known contaminated sites, showed no record of sites within the study area. However, a records search performed by the Riverside County Health Services Agency did indicate 35 sites within the study area which have contamination associated with underground tanks which store petroleum products. An additional site with lead contaminated soil was also on file with the city of Murrieta. The property, which was previously occupied by a battery manufacturing facility, contains 1050 cubic yards of lead contaminated soil. The EPA has installed an asphalt cap on the property to protect the public from exposure to lead contaminated soil.

Hazardous Materials Response Protocol

In the event of a hazardous materials incident in the city, the MFPD would initially respond to visually identify the material, and cordon-off the area. The MFPD does not have a hazardous materials team and would notify the County Health Department and call for assistance from the CDF Hazardous Materials Response Team. The CDF Hazardous Materials Response Team serving the Murrieta area is based at

Station 20 located in Beaumont. Staff responding from the County Health Department are located as close as Temecula. However the individuals responding could come from any one of a number of offices located throughout the county.[2]

Household Hazardous Waste

Household hazardous wastes include pesticides and herbicides, oil, paint, and numerous cleaning solutions. Improper disposal of household hazardous waste can cause serious environmental problems, particularly when these wastes are disposed of in sanitary landfills where they can leach through the soil and contaminate groundwater. To ensure proper disposal and reduce risks associated with household hazardous waste, the state of California requires that each county and city in the State prepare and adopt a similar Household Hazardous Waste Element (HH/WE) that includes the following components:

- Statement of Goals and Objectives
- Description of Existing Conditions
- Evaluation of Alternatives
- Program Selection
- Program Implementation
- Monitoring and Evaluation Program
- Education and Public Information
- Funding Mechanisms

As a newly incorporated city, Murrieta has just selected a consultant and has begun the process of developing a HHWE and a Source Reduction and Recycling Element.

AIRCRAFT HAZARD

The French Valley Airport, located approximately 2 miles outside of the city's sphere of influence, is a source of potential hazard to people and property within the study area. The airport is primarily used for single engine fixed-wing general aviation aircraft which accounts for 86.89 percent of total operations based on a 1990 forecast that assumed 59,500 flights per year.[3] Other aircraft in use include multi-engine aircraft (11.77%), business jets (0.50%), and helicopters (0.84%). Forecasts for future operations which assume an airport upgrade to accommodate more multi-engine general aviation aircraft and business jets, estimate 112,000 flights per year by the year 2000, with an average of 425 operations per day.

Based on the French Valley Airport Comprehensive Land Use Plan (FVACLUP), the French Valley Airport Influence Area extends into the extreme southwest area of the city and covers a large area within the city's sphere of influence (Figure 3.12-2). The "Airport Influence Area" is developed based on a composite of areas constrained by noise and height limitations. With the exception of concentrated

residential development off of Via Princessa within the Murrieta Hot Springs Specific Plan, and a residential development north of Hunter Road and west of Highway 79, the majority of the airport influence area is vacant or occupied by a few rural residences.

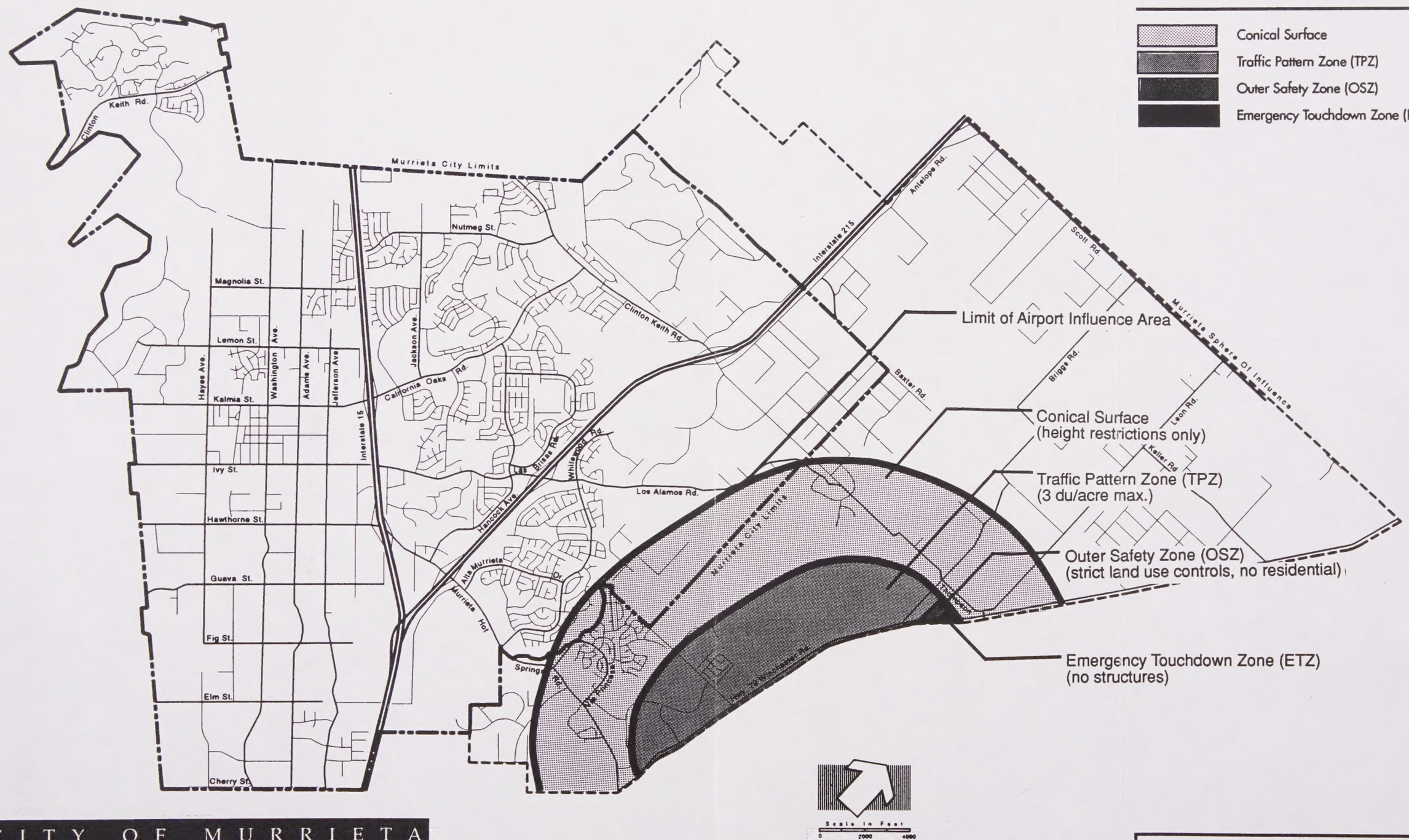
In order to ensure public safety on the ground, and the risks of serious harm to aircraft occupants, the state suggests the creation of five safety zones around airports. The following safety zones and their characteristics which are included in the FVALUP are summarized below:

Inner Safety Zone (ISZ) - The area immediately off the runway end, 1,500 feet wide and from 1,320 to 2,500 feet long depending on the type of aircraft and the runway approach. Of the five safety zones this is the area with the greatest risk for an aircraft accident. No structures, petroleum or gas pipelines, or above-grade powerlines should be permitted within this zone.

Outer Safety Zone (OSZ) - The area along the extended runway centerline immediately beyond the ISZ. The zone is 1,500 feet wide and ranges from 2,180 to 2,500 feet long. Within the OSZ the population density should be limited to 25 persons per acre or 150 persons per building, whichever is less. Structures should not cover more than 25 percent of an individual property. For outdoor uses, densities should be limited to 50 persons per acre. The following land uses which concentrate people at one location should be prohibited: dwellings, hotels/motels, places of public assembly (schools, hospitals, government services, concert halls, auditoriums, stadiums, and arenas), public utility stations and plants, and industries handling flammable materials.

Emergency Touchdown Zone (ETZ) - Applies only to the ends of precision or non-precision instrument runways or runways serving jet aircraft. It is 1,000 feet wide and extends 5,000 feet beyond the OSZ. The area is 500-feet wide and extends to the end of the OSZ. It is intended as an emergency landing area and no structures or significant obstructions should be permitted.

Traffic Pattern Zone (TPZ) - The area around the airport which is most frequently overflown by aircraft and encompasses the local traffic pattern. The boundaries are set at the outer edge of the horizontal surface. The horizontal surface extends 5,000 to 10,000 feet off the ends and sides of the runway primary surface depending on the type of approach (visual, non-precision, or precision). Within this zone, dwelling unit density should be limited to 0.4 to 3.0 units per acre, with lot sizes of 14,520 square feet to 2.5 acres. Structures should occupy no more than 50 percent gross lot area or 65 percent net lot area, whichever is greater. To ensure emergency landing areas within this area the following uses should be discouraged: schools, auditoriums, amphitheaters, stadiums and other similar places of public assembly. Industries handling flammable materials should also be discouraged.



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

French Valley Airport Influence Area & Safety Zones

FIGURE 3.12-2

Extended Runway Centerline Zone - Applies only off the ends of precision or non-precision instrument runways or runways serving jet aircraft. It is 1,000 feet wide and extends 5,000 feet beyond the OSZ. Structures that concentrate large numbers of people should be discouraged.

Areas of safety concern within the study area are limited to the ETZ, the OSZ, and the TPZ. There are 8 acres within the city's sphere of influence designated ETZ, and 19 acres designated OSZ. Both of these areas fall within the proposed Boreal Airpark Center Specific Plan. A wider area of the City's sphere is located within the TPZ, as shown on Figure 3.12-2. Other areas of the city and its sphere of influence within the airport influence area are not included in the discussed safety zones, and are only restricted by height.

In addition to the land use guidelines provided for each of the zones discussed above, there are a number of more specific land use restrictions that generally apply to all areas within the airport influence area. Many of the land use restrictions focus on uses that could interfere with a pilot's vision or cause electrical interference with navigational and communication equipment. Restrictions also apply to land uses such as landfills or grain storage, that can attract large numbers of birds. A more specific discussion of these land use restrictions can be found in the Airport Land Use Plan Handbook published by Caltrans in 1983.

In addition to safety zones, height standards are also set for areas within the influence of the airport. Height restrictions correspond to the height of the imaginary horizontal and conical surfaces that overlay the airport influence zone. Height restrictions for the French Valley area as proposed in the FVALUP are for the most part less restrictive than the height limits posed by existing zoning. The only exceptions are areas within the approach and transitional surfaces near the runway ends where height limits would be from 50 to 75 feet above the ground. The FVALUP states that most of this area is expected to be within airport property.

EMERGENCY PREPAREDNESS

The City of Murrieta Emergency Services Division (ESD) was created in June 1991 by the city and the MFPD to fulfill state and local requirements for disaster planning and emergency management. The relationship between the city and the MFPD is outlined in a Draft Memorandum of Agreement currently pending approval. The city manager serves as director for the ESD and the fire chief as assistant director. The ESD, currently staffed with one full-time position, is primarily responsible for providing compliance with the Federal Emergency Management Agency's program requirements. These requirements include establishing an effective emergency management system, associated plans, and training and public awareness programs. The ESD is overseen by the city's Disaster Council which is responsible for developing and recommending for adoption by the city council, emergency and mutual aid plans and agreements, and ordinances and resolutions, as necessary to provide an effective emergency management system.

One of the major responsibilities of the ESD is the development and maintenance of an emergency plan for the city. The plan is referred to as the Multi-Hazard Functional Plan (MHFP). The MHFP is the operational document which outlines specific response protocol for extraordinary emergency situations associated with natural or human-caused disasters, technological incidents, and nuclear defense operations. Day-to-day emergencies and well established routine emergency procedures are not covered in the plan as it focuses on large-scale disasters requiring unusual response. The document is intended to serve as a preparedness document, to be read and understood before an emergency. The document includes the City as part of the County and statewide emergency management system.

The MHFP is organized into the following three sections:

The Basic Plan - provides organizational and operational concepts for responding to various types of identified hazards which may impact the city.

Functional Annexes - describes emergency response organization and emergency action checklists for hazard-specific responses.

Operational Data - contains operational data such as listings of resources, key personnel, essential facilities (lodging, feeding, fallout shelters, etc.), contacts, and other data needed for conduction of emergency operations.

The MHFP is to be activated under any of the following conditions:

- On the order of the official designated by local ordinance, provided that the existence or threatened existence of a **local emergency** has been proclaimed in accordance with the appropriate emergency ordinance.

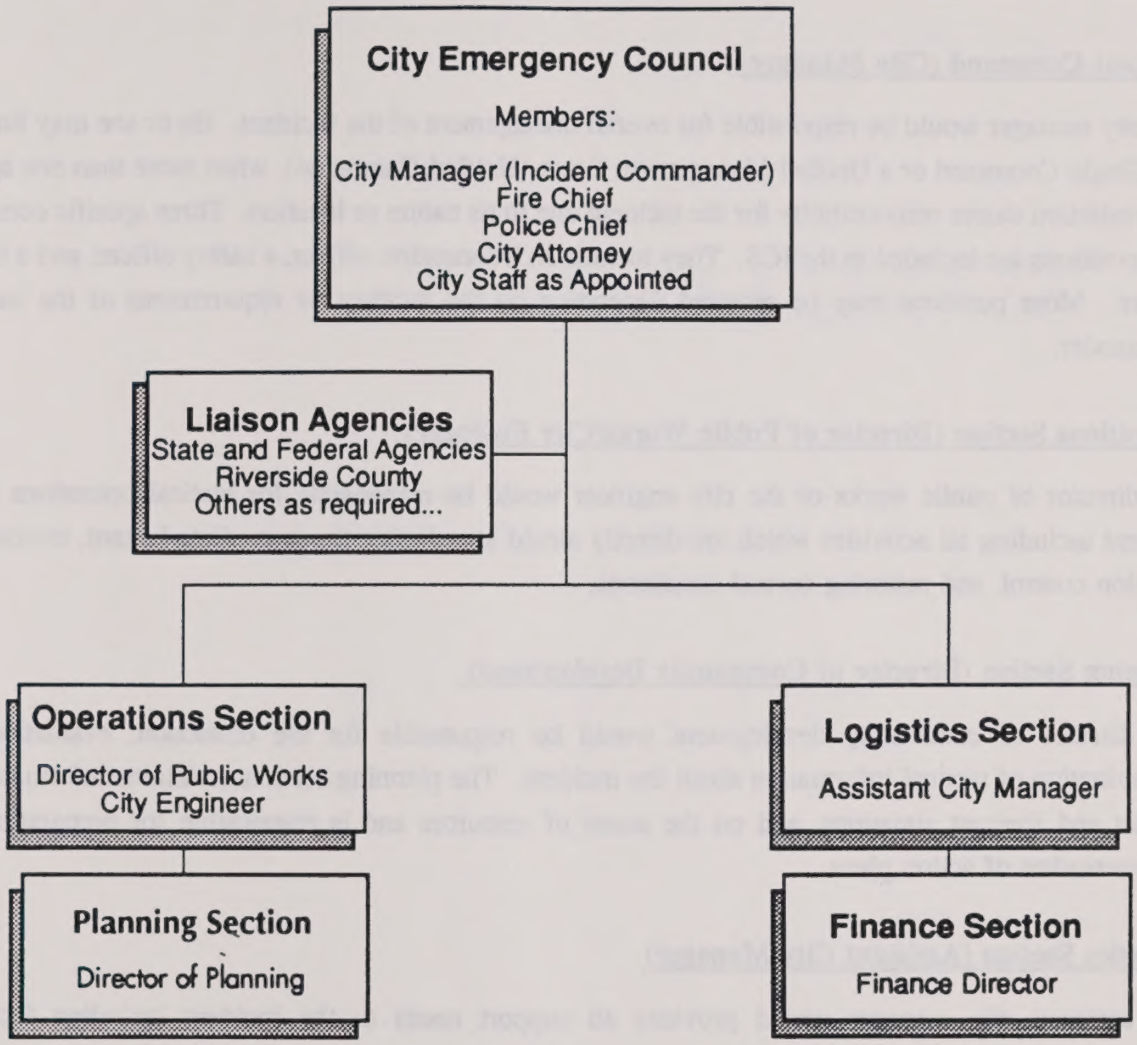
- When the Governor has proclaimed a **state of emergency** in an area including the city of Murrieta.

- Automatically on the proclamation of a **state of war emergency** as defined by the California Emergency Services Act.

- By a Presidential declaration of a national emergency.

- Automatically on receipt of an attack warning or the observation of a nuclear detonation.

In the event of a large scale disaster or emergency, the city will implement an Incident Command System (ICS) for managing incidents involving multi-disciplinary operations (i.e., concurrent fire, law enforcement and construction/engineering operations) and multi-jurisdictional response. The ICS, developed as a major



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

EMERGENCY MANAGEMENT ORGANIZATIONAL CHART

FIGURE 3.12-3

component of the National Interagency Incident Management System (NIIMS), is a widely accepted management structure and system consisting of personnel, equipment, facilities, communications and procedures for creating a single cohesive team for conducting effective on-site incident operations. The ICS organizational structure is based on five principal functional areas normally activated for a major incident (incident command, operations, planning, logistics and finance) and can accommodate all of the functions which might be necessary for an efficient and effective response (see Figure 3.12-3).

Incident Command (City Manager)

The city manager would be responsible for overall management of the incident. He or she may function as a Single Command or a Unified Management Team (Unified Command), when more than one agency or jurisdiction shares responsibility for the incident due to its nature or location. Three specific command staff positions are included in the ICS. They include an information officer, a safety officer, and a liaison officer. More positions may be required depending on the incident or requirements of the incident commander.

Operations Section (Director of Public Works/City Engineer)

The director of public works or the city engineer would be responsible for tactical operations at the incident including all activities which are directly aimed at reducing the immediate hazard, establishing situation control, and restoring normal conditions.

Planning Section (Director of Community Development)

The director of community development would be responsible for the collection, evaluation and dissemination of tactical information about the incident. The planning section maintains information on current and forecast situations, and on the status of resources and is responsible for preparation and documentation of action plans.

Logistics Section (Assistant City Manager)

The assistant city manager would provides all support needs to the incident including facilities, transportation, supplies, equipment maintenance, fueling, feeding, communications and medical services.

Finance Section (Finance Director)

The finance director would provide support for incidents with a specific need for financial or cost analysis services.

The ICS organization and the Incident Command System outlined above is intended to expand or contract based on the needs of a given incident, so that the organizational structure is never larger than required. In the event of a major emergency, the city's Emergency Operations Center (EOC) located at the Murrieta Police Station would be activated and the appropriate members of the ICS would be assembled. The EOC

is outfitted with multiple communications capabilities, including state and local radio networks which provide access to law enforcement, fire protection and public works channels.

ENDNOTES

1. Jim Wright, Division Chief, California Division of Forestry and Fire Protection, personal communication, September 16, 1992.

2. Vince Sternjacob, Supervisor, Hazardous Materials Branch, County of Riverside Department of Department of Environmental Health, personal communication, September 16, 1992.

3. French Valley Airport Comprehensive Land Use Plan, 1990 Forecast of Aircraft Operations, Page 2-6, Aries Consultants, August 4, 1992.

AESTHETICS / VIEWS

SECTION 3.13

3.13 AESTHETICS/VIEWS

INTRODUCTION

This section evaluates the visual resources of the city and its environs and the quality of views from specific vantage points. Difficulties arise when evaluating and describing visual quality because few objective or quantitative standards exist, and individuals respond differently to characteristics of the visual environment. What may be considered an adverse visual condition to one person may be considered scenic to another. For most people, the perception of visual quality for an area is created by the impressions formed when viewing a place from one or more vantage points. With this in mind, a visual survey was conducted in June of 1992 to evaluate the visual resources of the area and the quality of views from public vantage points and circulation routes. The methodology used for the following analysis included information gathered during a field reconnaissance and photographic survey, combined with the use of aerial photographs and other data maps.

VISUAL CHARACTER

The visual character of the city of Murrieta is defined to a large extent by the physical geography of the area. Murrieta is located in the Murrieta Valley region and is surrounded by rolling hillsides and steep mountain slopes. The Santa Rosa Plateau and Santa Ana Mountains located immediately to the west are the most dominant and significant visual features contributing to the city's scenic quality. Other mountain ranges that are visible from the city include the Santa Margarita and Agua Tibia ranges to the south, and the San Jacinto ranges to the east. Elevations in the study area range from approximately 1030 feet above mean sea level (+1030 msl) in the valley to about +2120 feet msl in the rolling hills in the northern portion of the study area, and to about +1620 msl along the steep hillsides of Slaughterhouse Canyon in the extreme western portion of the study area. In addition to the surrounding hillsides and mountains, Murrieta and Warmsprings creeks and a number of tributaries course through the city in a southwesterly direction. Where the creeks and streambeds have not been substantially disturbed they provide the city with an important scenic resource.

The majority of vegetative cover in the city has been introduced by past agricultural practices and more recent residential and commercial development. As a result, developed areas of the city are characterized by landscapes that are mostly comprised of non-native ornamental plants. Despite the alteration of much of the city's native plant communities, significant areas of chaparral and riparian scrub and forest still remain. These areas of native vegetation contribute to the visual quality of the study area's hillsides and creek corridors. The largest concentrations of native vegetation are found in the foothills and canyons in the extreme western portion of the city, along the slopes and base of the Hogbacks, in the steeper

northeastern hillsides of the study area, and along portions of Warm Springs Creek, and to a lesser extent Murrieta Creek. In addition to these concentrations of native vegetation, stands and single specimens of large oak trees remain scattered throughout the study area.

The visual character of the city is also influenced on a continual basis by human activity and the evolving built environment. Murrieta has a long history of occupation, and remnant structures, roadways, and landmarks remain in the older sections of the study area. The most significant historical areas of the city are along Washington Avenue (west of I-15), and Los Alamos Road (east of I-215). These historic areas, in combination with portions of the city devoted to horsekeeping and agriculture contribute to the city's remaining rural character. Newer residential and commercial development in the city is generally concentrated east of the I-15 freeway, with older lower density areas remaining for the most part west of the I-15, and to the east along Los Alamos Road.

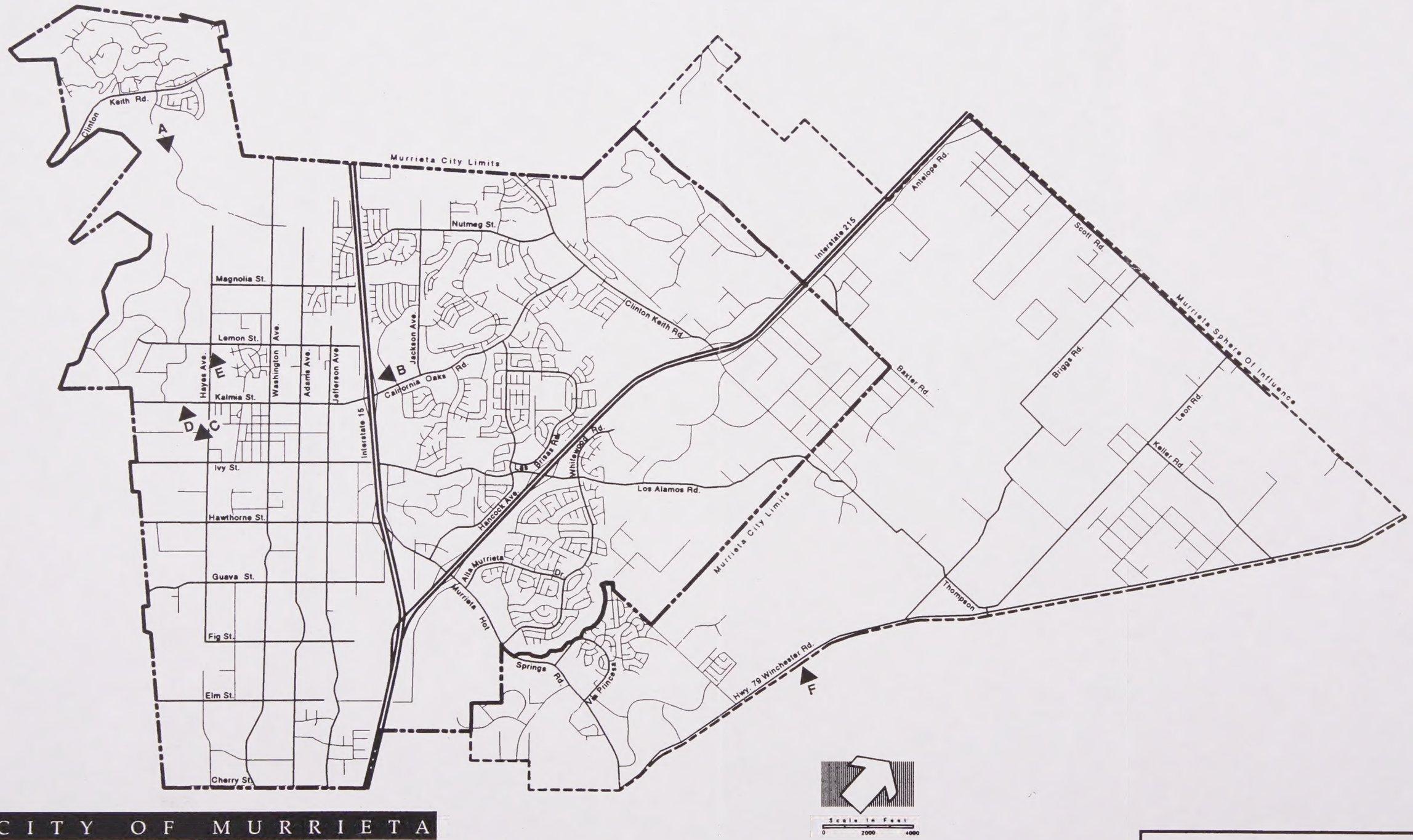
On a regional level, growth in Murrieta is an extension of development that has accelerated in recent years along the corridor provided by the I-15 freeway. The city of Temecula located immediately to the south of the city continues this pattern of development south into San Diego County. Both the I-15 and 215 freeways which converge toward the southern edge of the city are important visual features of the manmade environment.

EXISTING VIEWS

From vantage points in the northwest foothills of the city there are expansive long-range views of the Murrieta Valley to the southeast and north (Photo A). These views are enhanced by the ridgeline of the Santa Ana Mountains that extends to the south, and by the more distant mountain ranges to the south and east.

From most of the study area west of the Hogbacks and along the I-15 and I-215 freeways, there are exceptional views of the Santa Rosa Plateau and the relatively undisturbed ridgelines that extend to the north and south (Photo B). These views of the chaparral covered hillsides are one of the primary factors that contribute to the scenic quality of the city. While the city limits do not extend beyond the lower foothills of the Santa Ana Mountains (+-1,600 feet), the limited residential development on these foothills is visually prominent. Where grading has taken place and natural vegetation has been cleared upslope from homes it has created a strong line of contrast between the altered and unaltered hillsides (Photo C). The canyons and oak woodlands in this area are also a significant visual resource.

In addition to the ridgelines, canyons, and hillsides in the western portion of the city, much of the area west of Washington Avenue also has high scenic quality. The area is characterized by low rolling hillsides, horse ranches, tree groves and open fields. The rural character of this area, combined with the mountain backdrop, provide scenic views along the corridor established by Hayes Avenue (Photo D).



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

PHOTO KEY MAP

FIGURE 3.13-1

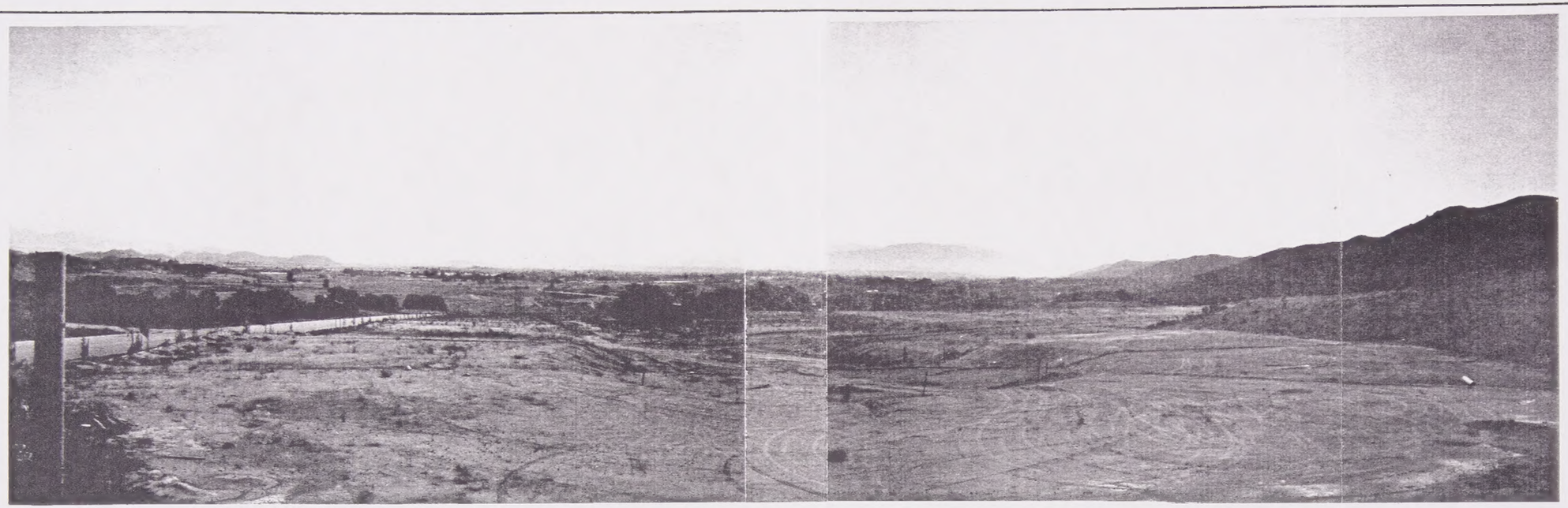


Photo A: View from the northwestern portion of the city to the southeast. The Santa Ana Mountains ridgeline is to the west and the Agua Tibia and Santa Margarita ranges are to the south.

Photo B: View to the west of the Santa Rosa Plateau and Santa Ana Mountain ridgeline taken from Rancho California Road.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

STUDY AREA PHOTOS

FIGURE 3.13-2

Photo C: View west from Murrieta Creek. A strong line of contrast exists where brush clearance and grading for new homes has taken place.

Photo D: View to the north along Hayes Avenue. This scenic corridor along Hayes Avenue shows the rural character of the western portion of the city.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

STUDY AREA PHOTOS

FIGURE 3.13-3

Although much of Murrieta Creek has been channelized or seriously eroded, the creek, and its areas of riparian vegetation, is a scenic resource with significant potential for restoration and enhancement (Photo E). Warm Springs Creek, which meanders through the eastern portion of the city, is much less disturbed and is also an area of high scenic quality.

The Hogbacks, a prominent ridgeline that traverses the eastern portion of the study area, is a distinct visual feature (Photo F). Although some ridge top development has occurred along the Hogbacks, much of the western slope and the base of the slope where it meets Warm Springs Creek remains relatively undisturbed with a high concentration of natural vegetation. The corridor established by Los Alamos Road is another scenic portion of the study area. Views along the country road are characterized by low density residential development, rolling hillsides, unique rock outcroppings, and groves of eucalyptus and olive trees.

SCENIC HIGHWAYS

The Scenic Highway Program was established by state legislation (Senate Bill 1467) in 1963 to help communities protect and enhance their natural and cultural uniqueness and beauty. It is encoded in the Streets and Highways Code (Division 1, Chapter 2, Article 2.5., Section 263). One of the required steps to receive official designation is to prepare a scenic corridor protection program consisting of policies in the local general plan and implementing ordinances. The minimum requirements for a protection program are:

a. Adoption of land use/intensity classifications.
b. Establishment of a design review authority and defined regulations for project review.
c. Control of outdoor advertising.
d. Attention to and control of grading, including landscape requirements.
e. Design and appearance of structures and equipment.
f. Preparation of program in cooperation with local citizen committees, affected property owners, environmental groups, etc.

Interstate 15 is included in the Master Plan of State Highways Eligible for Official Highway Designation. The city would need to process a submittal through Caltrans for finalization of the Official State Highways Designation.

Interstate 215 is currently shown on the County's Master Plan of Scenic Highways as being eligible for official designation as a County Scenic Highway. The city would need to process a submittal through the county for finalization of the Official County Scenic Highways Designation.

In May of 1992, the Murrieta City Council directed staff to pursue necessary action for designating Interstate 215 as a scenic highway. Staff has since recommended that legislative assistance be secured to add Interstate 215 to the Master Plan of State Highways Eligible for Official Designation, and that the

Photo E: View west along a relatively undisturbed section of Murrieta Creek.

Photo F: View of the Hogbacks from the eastern edge of the study area.

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

STUDY AREA PHOTOS

FIGURE 3.13-4

state designation process be initiated for both Highways. Staff also recommends that the county designation process be initiated for Interstate 215.

In addition to the scenic value of Interstate 15 and Interstate 215, the historic value of Los Alamos Road has also been formally recognized by the Murrieta City Council. Furthermore, in March of 1992, the Riverside County Historical Commission, as advisory commission to the Riverside County Board of Supervisors, recommended to the Board that a four-mile stretch of Los Alamos Road, between Via Santee and Winchester Road, be designated as a county historic route. The road has been a link in various historic trail systems through Native American, Spanish-Mexican (mission-rancho), American settlement and farming periods.

State Route 79 (Winchester Road) is also listed in the Riverside County Comprehensive General Plan as an Eligible County scenic highway.

LIGHT AND GLARE

SECTION 3.14

3.14 LIGHT AND GLARE

INTRODUCTION

This section of the MEA describes existing sources of light and glare as well as sensitive receptors in and around the city.

As a result of development, intrusive light and glare often occur in the vicinity of a project. There are primarily two sources of light intrusion: 1) light emanating from the interior of a structure and passing through windows, and 2) light from exterior sources, such as building illumination, security lighting, and lighting around courtyards, plazas and walkways. Glare mainly results from sunlight reflection off flat building surfaces, with glass typically contributing to the highest degree of reflectivity. Light intrusion can be a nuisance in residential areas and a deterrent to wildlife in urban fringe areas. Glare can be an unpleasant distraction and a potential hazard, interfering with motorists' vision and concentration.

LIGHT

The major sources of light in the city are primarily associated with buildings, recreational facilities, parking lots, and street lights. Lighting is most concentrated in the more developed central area of the city. Lighting sources quickly drop off in the rural and hillside areas to the east and west of the city.

There are three sensitive light receptors affected by lighting in the city: residential development, wildlife, and the Mount Palomar Observatory. Residential development is often sensitive to lighting from roadways and other land uses, particularly multi-story commercial development, parking lots, and recreational areas. Where developed areas border natural habitat, lighting can disturb or act as a deterrent to wildlife. This is particularly significant in areas of the city that function as wildlife corridors, because lighting could discourage wildlife hunting and movement.

Another sensitive light receptor is the Mount Palomar Observatory, which is located approximately 25 miles to the southeast of the project site. The observatory, which has been in operation since the 1930's is run by the California Institute of Technology. Light emissions from street, safety and other lighting sources, depending on the level of multispectrum wave energy produced, can cause interference with telescope operations. Light sources that produce too many wavelengths of energy cannot be adequately filtered by the telescope and can severely compromise the efficiency of the observatory, as has occurred in the Los Angeles area with the Mount Wilson Observatory and the Griffith Park Observatory.

In response to these concerns, Riverside County, the city of San Diego, and a number of other jurisdictions have adopted outdoor lighting ordinances to restrict undesirable light rays which could have a detrimental

effect on astronomical observation and research. Riverside County Ordinance No. 655 has been in effect since July 7, 1988. The ordinance applies standards for lamp type, shielding, and time of operation based on the designated class of lighting for different sensitivity zones. Sensitivity zones are based on the distance by radius from the observatory. Zone A includes the area within a fifteen (15) mile radius of the Palomar Observatory. Zone B extends from the edge of Zone A to a total distance of forty-five miles from the observatory. The entire area of the city of Murrieta is located within Zone B. Restrictions in the ordinance are based on the described sensitivity zones and the following three classes of lighting:

Class I Lighting - All outdoor lighting used for, but not limited to, outdoor sales or eating areas, assembly or repair areas, outdoor advertising displays and other signs, recreational facilities and other similar applications when color rendition is important.

Class II Lighting - All outdoor lighting used for but not limited to, illumination of walkways, private roadways and streets, equipment yards, parking lot and outdoor security.

Class III Lighting - Lighting not needed for Class I or Class II purposes and used for decorative effects for the illumination of flag poles, trees, fountains, statuary, and building walls.

In general, the ordinance prohibits all Class I lighting in Zones A and B from operation between 11:00 p.m. and sunrise (with some exceptions), and prohibits other than low pressure sodium street lights on private roadways and streets within the same zones. Lighting installed prior to July 7, 1988 is exempt, except when reconstructed and replaced.[1]

GLARE

Glare results from sunlight reflection off flat building surfaces. Glass typically contributes to the highest degree of reflectivity. Glare can be an unpleasant distraction and a potential hazard, interfering with motorists' vision and concentration. Glare can also be obtrusive and an annoyance in hillside areas where it can degrade scenic views. As there are no large high-rise buildings and few other structures in the city which are constructed with highly reflective materials, few problems exist. However, as new development occurs, glare could become a problem if appropriate consideration is not given to the choice of building materials.

ENDNOTES

1. Ordinance No. 655 of the County of Riverside Regulating Light Pollution, adopted June 7, 1988.

CULTURAL RESOURCES

SECTION 3.15

3.15 CULTURAL RESOURCES

INTRODUCTION

This section describes known archaeological, paleontological, and historical resources and the potential for encountering previously undiscovered resources in the city of Murrieta. The analysis is based on a cultural resources record search for the city of Murrieta conducted by the University of California, Riverside, Department of Anthropology, Eastern Information Center, and on a paleontological resources report prepared by the San Bernardino County Museum Earth Sciences Division.

CULTURAL RESOURCE SURVEYS

Cultural Resources are defined as the material remains of an area's prehistorical (aboriginal/native american) or historical (European and Euro-american) human activity. Remains that are 45 years of age or older are of cultural concern, although they are not necessarily of cultural significance as defined by the California Environmental Quality Act.

Records from the University California, Riverside indicate that 109 cultural resource reports have been completed for specific projects within the city limits. Approximately two-thirds of the city area has been surveyed for cultural resources. However, over half of this area was surveyed more than a decade ago. Since this time, archaeological research questions, standards, and methods have changed substantially, and as a result, a significant number of resources may not have been identified.

ARCHAEOLOGICAL SITES

Archaeological resources are identified by discovering any of the following categories of resources: midden (ashy or greasy dark soil indicating occupation); milling features and related ground stone tools; rock shelters; rock features (cairns, walls, etc.); rock art (petroglyphs, pictographs, etc.); quarries for tool manufacture; ecofactual material (faunal remains, fire-affected rocks, etc.); and trails. Other indicators of aboriginal occurrences are pottery, tool-manufacturing waste, body adornments (such as shell or bone beads, bracelets, etc.), or human skeletal remains. Historical remains can include privies, mines, graves, cemeteries, homesteads, fallen or standing structures, and scattered artifacts.[1]

The California Archaeological Inventory has recorded 53 archaeological sites within the boundaries of the city of Murrieta. An additional 65 sites were recorded within one mile of the city limits.

Archaeological sites are described based on the period and type of occupation associated with the resources. The three categories used in describing archaeological sites are "prehistoric", "ethnographic" and "historical". Prehistoric sites are those that exhibit no evidence of Euro-american contact such as glass beads, metal artifacts, or written documentation. Ethnographic sites are sites occupied by Native Americans during the period of early Euro-american settlement. Historical sites are those associated with the advent of written documents: these sites are also known as Euro-american sites. Historical sites include sites of early spanish settlement and more recent sites of cultural significance that are 45 years of age or older.

Prehistoric Period

During the prehistoric period, the study area was occupied by the groups of Native Americans known as the Luiseno. These groups are named after the Mission San Luis Rey de Francia, located in present day Oceanside. The Luiseno culture extended throughout much of southwest Riverside County, eastern Orange County, and north San Diego County. The group was part of the Shoshonean language family which covered parts of Nevada, Utah, Arizona, and California. The Luiseno were hunters and gatherers who moved seasonally from the coast to inland areas. A large part of their diet was derived from acorns which were converted into flour. Other sources of food included deer, antelope, birds, small mammals, and insects. At least two significant Luiseno settlements are known to have occupied portions of the study area. The Pechanga Indian Reservation, located southeast of Temecula, is the closest existing Luiseno settlement. Extensive ethnographic literature on the Luiseno and their activities in the area has been collected since 1800.[2]

Prehistoric occupation of the Murrieta and Temecula area (Murrieta Valley) dates back at least 4,000 years, but there is substantial evidence that occupation of Southern California dates back to 14,000 years ago. Because few sites in the area with datable material have been excavated, it is assumed that some sites may be much older than 4,000 years.

The types of sites associated with the prehistoric occupation of the Murrieta Valley range from single bedrock milling slicks (used to process plants and animals), to scatters of tools and flaked stone, to large village sites containing tools of many types, and midden (soil which has been chemically changed by longer human occupation). These site attributes can be found individually or in combination.

Ethnographic Period

The ethnographic period includes Native American sites which were occupied during the stage of European and Euro-american contact. These sites, which can include whole villages, often contain tools, pottery, body adornments, as well as occasional items of European manufacture obtained by trade.

Historical Period

The historical period of the valley began when the first Spanish explorers traveled through the area in the late eighteenth century. In the early 1800's, what is know as old town Murrieta, was known as Alamos, and was used as a rest stop on the Sonoran Trail. Los Alamos Road linked the Los Alamos Valley (in the San Jacinto Plains) to Alamos, and became a travel route. During this period, both the San Luis Rey and San Juan Capistrano missions claimed the territory for cattle raising. In 1835, the Rancho Temecula landgrant was established which included a portion of the city of Murrieta. The most vigorous period of American settlement began in the mid 1850's, increasing after the gold rush. By 1861, Willow Springs Station was established in the old town area as a stage stop for the Butterland Overland Stage. Early in 1882, California Southern Railroad, a Santa Fe affiliate, reached the valley from National City and San Diego, with its ultimate destination being Colton. With a depot located on Clay Avenue near "B" Street, further settlement of the area as an agricultural community continued. In support of the areas agriculture, Los Alamos Road became an important market road between Murrieta and the grain field of Los Alamos.

In 1908, a hotel at Murrieta Hot Springs was established. The hot mineral springs associated with the area continues to draw visitors to the area. Cultural resources associated with Euro-american occupation include many sites such as early ranching homesteads, Schupe's Log Cabin, and historic resort hotels and schools. The area has remained predominantly rural with dry farming as the principle industry until recently.[3]

Although the city of Murrieta has a rich history and a number of historic structures and sites that are eligible for listing, the National Register of Historic Places, California Historic Landmarks, and the California Inventory of Historic Resources show no submittals for evaluation or listings for the area. The Riverside County Historic Resources Inventory lists 72 eligible properties in the city based on a survey conducted in the late 1970's and early 1980's. Historic sites and structures within the study area are shown on Table 3.15-1 and Figures 3.15-1 and 3.15-2.

No.	Common Name	Address
1	M.T. Auto Parts	42011 "A" St.
2	Jake Lambert House	24260 Adams Ave.
3	Sawyer House	24370 Adams Ave.
4	Curtis Thompson House	24460 Adams Ave.
5	Brown House	25549 Adams Ave.
6	Roy Southard Place (historical name)	25701 Adams Ave.
7	Lambert Home (historical name)	24711 Clay Ave.
8	Fountain House Hotel (site) (historical name)	24737 Clay Ave.
9	Mance House	24721 New Clay Ave.
10	Grain elevator	Clay Ave
11	Frank Lloyd House	41919 C St.
12	Frank Thorn House	42086 C St.
13	Cora Stoller House (historical name)	42036 D St.
14	Sykes House	24120 Hayes Ave.
15	Mefferd	24916 Hayes Ave.
16	None	41833 Ivy St.
17	Rail House	41950 Ivy St.
18	Olive Hill Ranch	42835 Ivy St.
19	Provolt House	25679 Jefferson Ave.
20	Raleigh Brown Plave (historical name)	25751 Jefferson Ave.
21	Cruz House	41958 Juniper St.
22	Hite House	41539 Kalmia St.
23	The Hind Ranch (historical name)	37100 Los Alamos Rd.
24	James Place	37201 Los Alamos Rd.
25	Yoder Ranch (historical name)	37201 Los Alamos Rd.
26	Ross Rail Ranch (historical name)	40851 Los Alamos Rd.
27	Morrow Place	41621 Magnolia St.
28	B.W. Tarwater House	24954 Plum Ave.
29	McCool House	42670 Tenaja Rd.
30	Rancho Viejo de Carillo (Wheller Ranch)	10250 Verdugo Rd.
31	Anderson's Cafe	24190 Washington Ave
32	Paul Thompson Place	24264 Washington Ave
33	U.S. Soil Conservation Office (historical name)	24280 Washington Ave
34	Thompson House	24490 Washington Ave
35	Kane House	25629 Washington Ave
36	Sam Barnes House	24641 Washington Ave
37	Ray's Cafe	24770 Washington Ave
38	A.K. Small House (formerly Thompson home)	24771 Washington Ave
39	Bezanson House	24792 Washington Ave
40	Hamilton House	24854 Washington Ave
41	Garrison House and machine shop	24890 Washington Ave
42	Cliff Thompson House	24973 Washington Ave
43	Stoner House	25190 Washington Ave
44	Buchanan House	25229 Washington Ave
45	Hutchinson House	25440 Washington Ave
46	Holiness Parsonage	24695 1st St.
47	Houston House	24903 1st St.
48	Freeman Home (historical name)	24995 1st St.
49	None	24646 2nd St.
50	None	24628 2nd St.
51	Murrieta Elementary School (historical name)	24675 2nd St.
52	Chrisman Place	24770 2nd St.
53	None	24790 2nd St.
54	Hogbacks Ridges	Los Alamos Rd.
55	Warm Springs Creek	Los Alamos Rd.
56	Olive Trees	Los Alamos Rd.
57	Garringer Farmhouse	Los Alamos Rd.
58	Thompson Homestead	Los Alamos Rd.
59	Alamos School original site	Los Alamos Rd.
60	Episcopal Church	Washington Ave
61	Murrieta Post Office	Washington Ave
62	Donut Shop/A.K. Small Store	Washington Ave
63	Murrieta County Market/B.W. Tarwater Store	Washington Ave
64	Avaxat site	Ivy St.

Historical Sites and Structures Inventory

TABLE 3.15-1

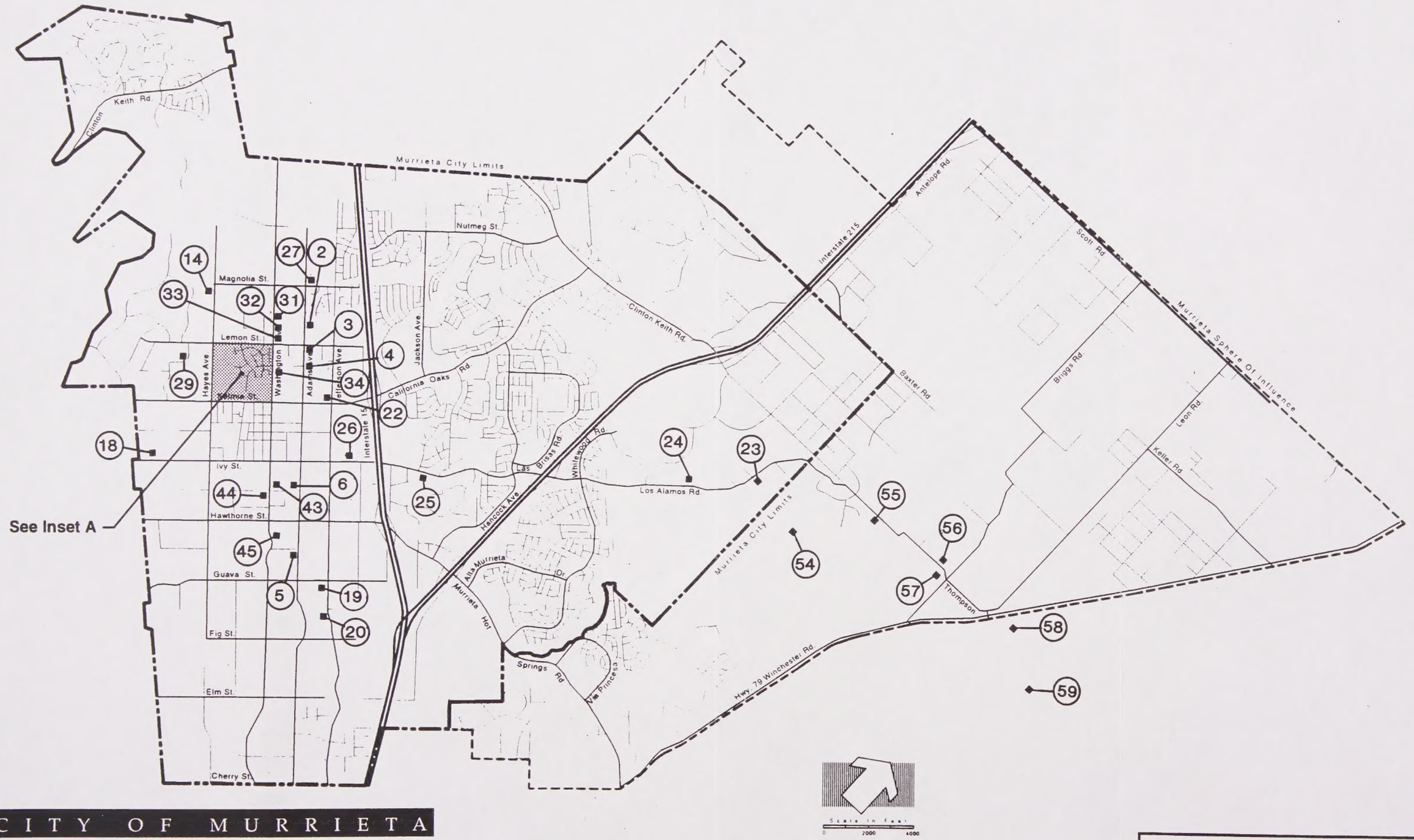
CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Source: Citizens for Historic Murrieta

Historic Sites and Structures Map
Inset A
Murrieta Downtown Historical District

FIGURE 3.15-1



Source: Citizens for Historic Murrieta

CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

Historic Structures Map

FIGURE 3.15-2

With reliable water resources and fertile land, the Murrieta area has always been a reliable place to live, and it is not unusual for a single site to contain evidence of occupation from the prehistoric through the historical period. Many occupation sites have been destroyed by Euro-american development prior to the adoption of laws to protect them, and other sites have been buried over time by alluvial deposits. Long-term occupation sites (village sites) contain more remains of daily living than do smaller short-term habitation sites, therefore, the village sites in the Murrieta area are considered particularly valuable to researchers for their evidence about past cultures. Adding to the cultural sensitivity of the area, human remains, both as burials and cremations, have been found in habitation and camp sites of all periods. Both prehistoric and historic human remains have been found in the Murrieta area.

Methodology

A determination of the sensitivity of a property for cultural resources is typically initiated with the completion of an archaeological records search which identifies known sites and survey and excavation reports. By evaluating this information and mapping site characteristics and proximity to known or suspected sites, a determination is made as to whether the project site could contain sensitive cultural resources that would require field investigation. Field work generally proceeds according to the following phases:

- Phase I - Survey
- Phase II - Testing
- Phase III - Data Recovery
- Phase IV - Monitoring

Phase I of field work identifies any resources visible on the surface during an on-site survey. A Phase I survey must be proceeded by a records search to determine whether there are any known sites or surveys that have been conducted on or in close proximity to the property in question. A report is prepared outlining the results and any recommendations for the preservation or mitigation of cultural resources.

If resources are found during the first phase, Phase II is often recommended. The purpose of this phase of the fieldwork is 1) to determine the presence of subsurface deposits, and if discovered, 2) collect quantitative data on the character and quantity of remains so that the data recovery/protection plan can address specific research values. Testing is accomplished by hand-excavated units and in some cases by mechanical means (for example, by backhoe). If no subsurface artifacts are found, surface features are mapped, collected, and reported in the Phase II report. Under this circumstance, further work is typically not recommended.

If subsurface artifacts are found to be significant, they should be avoided or mitigation should be provided to offset impacts. Testing should be conducted in a manner that allows for a plan of data recovery (Phase

III). If the site is not impacted directly, some consideration must be given to its protection from other possible impacts. This is most effectively accomplished in a management plan with short- and long-term goals for protection of the site.

Phase III, data recovery, involves large-scale excavations and analysis of recovered materials. Categories of artifacts typically recovered include: ground stone (manos and pestles used to grind plant and animal matter); milling surfaces (portable and non-portable metates and mortars used in conjunction with the ground stone); flaked stone artifacts (e.g., projectile points, knives, etc.); floral and faunal remains; and ceramics (during the late prehistoric period after 1550 A.D. in this area). Analyses of the materials provide an interpretive frame which helps determine "who, when, where, and Why?"

Phase IV, monitoring takes place during grading and earth moving activities in an effort to discover any buried deposits that may exist. Monitoring of large projects is not usually recommended, except in sensitive areas.

Planning Considerations

Numerous archaeological studies and other information documented by the University of Riverside makes it clear that much of the city has a high degree of cultural resource sensitivity with varied and valuable resources demonstrating Murrieta's rich heritage.

Proper identification and protection of cultural resources is mandated by state law and is primarily initiated through the conformance procedures of CEQA. Under CEQA, an archaeological survey may be required for a project if cultural resources are identified as potentially significant during environmental review. The approach to making a determination of significance is essential to ensure protection of these resources.

The Eastern Information Center (EIC), located at the University of California, Riverside, is one of eleven regionally based centers under agreement with the California Office of Historic Preservation (OHP), that serves to collect and distribute cultural resource information throughout the state. As part of the State system, the EIC is an essential part of the gathering, analyzing, and reporting process for cultural resources. The EIC has an extensive cultural resource data base which maintains the latest records and reports for Riverside and other Counties. With an experienced and specialized staff, and access to the data base, the EIC can provide informed assessments of projects under environmental review in order to determine resource significance and the need for any mitigation (i.e. surveying, testing, data recovery, or monitoring).

The County of Riverside has entered into a Memorandum of Understanding (MOU) with the EIC that insures that all county projects undergoing environmental review be routed to the EIC for comment. The EIC reviews projects and sends recommendations to the county planning department specifying any cultural resource requirements. The EIC charges a small fee which the county passes on to the project

proponent as part of the application fee. The EIC recommends that all cities within their service area, including the city of Murrieta, establish similar formal procedures to inform applicants early in the planning process of cultural resource considerations.

PALEONTOLOGY

Paleontologic resources are plant and animal fossils dated from 3.5 million to 7,000 years ago. Typical paleontologic resources include hardened remains from plants, vertebrates or invertebrates. Paleontologic resources are afforded protection by federal, state, and county environmental laws and guidelines.

The following discussion of the paleontologic resources of the area has been summarized from the San Bernardino County Museum Paleontological Resources Report, prepared for the City of Murrieta in September of 1992.

The Murrieta area of Riverside County is underlain almost exclusively by highly fossiliferous rock units such as the Pauba formation and Unnamed Sandstone formation. Quaternary Old Alluvium is another formation that has potential to contain preserved fossils. In the Murrieta area, these formations have yielded a remarkable array of taxa with hundreds of localities (sites) recorded in the San Bernardino County Museum's computer data base of paleontologic sites in California, Nevada and Arizona. Some of these localities have proven to be the most significant Pleistocene sites in all of Riverside County. Sediments in the area range from 3 million years old (Blancan Land Mammal Age) to younger than 700,000 years old (Irvingtonian to Rancholabrean Land Mammal Ages).[4]

The localities in the Murrieta area have produced more than 69 taxa of fossil vertebrates which include mammoth, mastodon, ground sloth, dire wolf, short-faced bear, saber-toothed cat, tapir, camel, llama, and pronghorn. Deposits have also yielded smaller vertebrate fossils that have contributed significant information toward deciphering the temporal constraints under which these sediments were deposited. Small vertebrate fossils recovered in the area include: rodent, rabbit, bat, shrew, bird, amphibian, lizard, tortoise, and turtle.[5]

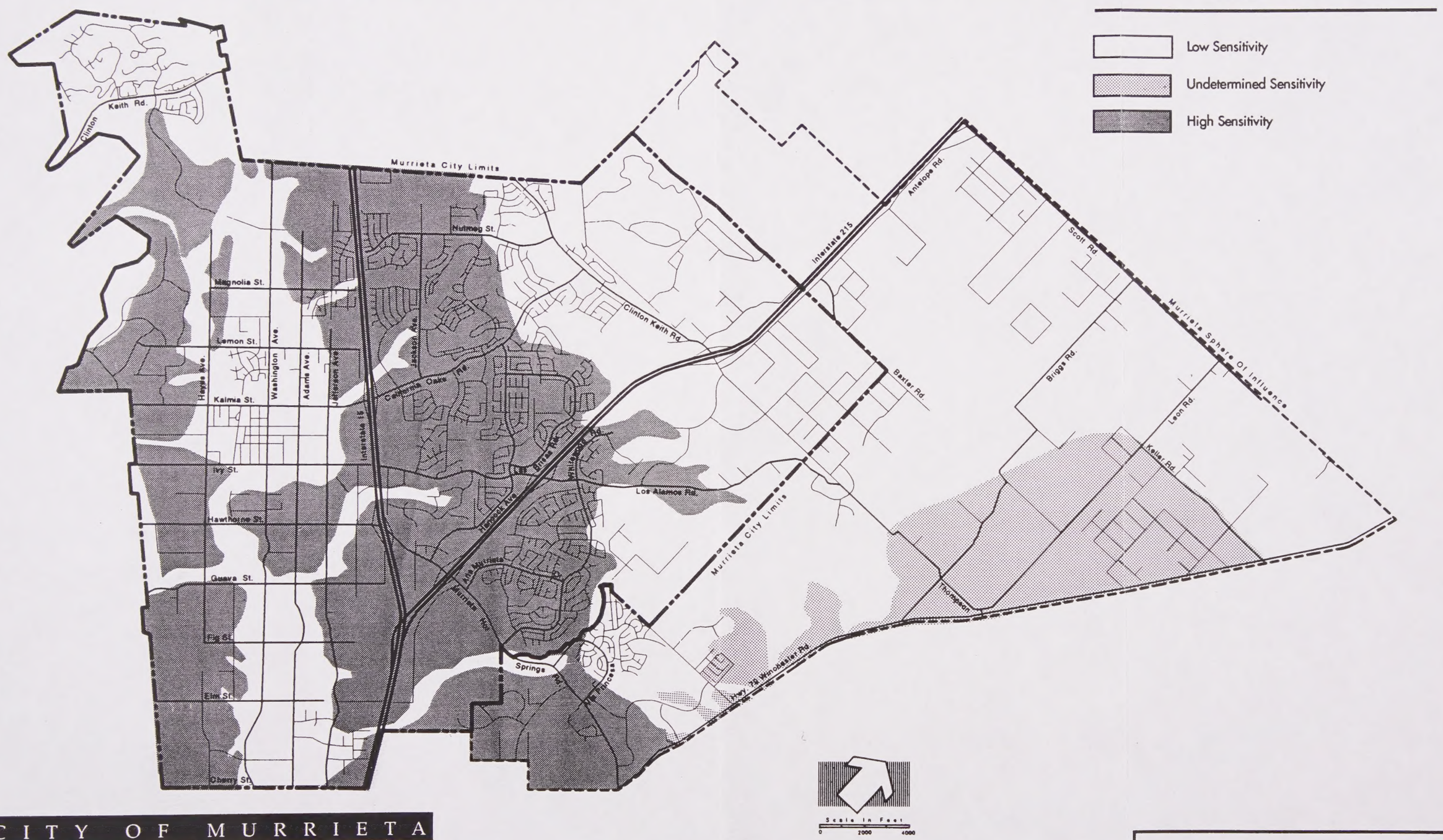
Being located along the Elsinore fault zone, the Murrieta area is situated on a complex network of geologic units. Igneous, metamorphic and fossiliferous sedimentary rock formations are all exposed in the study area. Geologic formations are ranked by their potential to contain significant, nonrenewable paleontologic resources (SNPR). Formations are ranked as either HIGH, LOW, OR UNDETERMINED. Both igneous and metamorphic rock rocks in the study area have a low potential to contain SPNR. Recent alluvium, located in the areas stream beds, and older sedimentary rocks, will not contain SNPR. However, recent sediments can often be a thin veneer with excavation potentially resulting in disturbance of underlying sensitive rock units. Recent alluvium is also considered to have a low potential for containing SNPR.[6]

The following describes the three major fossiliferous Pleistocene age sedimentary rock units exposed along the Elsinore fault zone within the study area. A paleontologic sensitivity map (Figure 3.15-3) is also provided which outlines the formations distributions within the study area.

Unnamed Sandstone (middle Pleistocene, may span 200,000 years between 850,000 and 650,000 years before present)

Paleontologic localities in the Unnamed Sandstone portions of the study area contain diverse Ice Age fauna, that includes a faunal assemblage indicating a late Blancan Land Mammal Age. In the California Oaks area, a separate fossil assemblage represents the Irvingtonian Land Mammal Age which suggests the lower portion of the sedimentary section in this region is less than 850,000 years old.

The Unnamed Sandstone localities within the project area are among the most important late Irvingtonian Land Mammal Age (middle Pleistocene) sites in California and have produced at least 45 vertebrate taxa and additional invertebrate taxa. This formation is considered to have HIGH potential for containing significant, nonrenewable paleontologic resources. A composite taxa list for the Unnamed Sandstone formation is shown in Table 3.15-2.



CITY OF MURRIETA

MASTER ENVIRONMENTAL ASSESSMENT

PALEONTOLOGICAL SENSITIVITY

FIGURE 3.15-3

TABLE 3.15-2
UNNAMED SANDSTONE COMPOSITE TAXA

Megalonyx wheatleyi	extinct ground sloth
Mammuthus sp.	extinct mammoth
Mammut sp.	extinct mastodon
Antilocapra sp.	pronghorn antelope
Equus bautistensis	extinct large horse
Arctodus simus	short-faced bear
Canis cf. C. dirus	dire wolf
Canis latrans	coyote
Mimomys (Orphiomys) parvus	vole
Peromyscus sp.	deer mouse
Paraneotoma fossilis	ancestral wood rat
Sigmodon sp.	cotton rat
?Dipodomys sp.	kangaroo rat
Perognatus sp.	pocket mouse
Thomomys bottae	Botta's pocket gopher
Leporinae	rabbits
cf. Scapanus	mole
Masticopus sp.	whipdsnake
Pituophis melanoleucus	gopher snake
Geochelone sp.	extinct giant tortoise
?Clemmys sp.	pond turtle
Plethodontinae	salamander
Bufo sp.	toad
Hyla sp.	tree frog
Rana sp.	toad
Institutional Site Records	
SBCM# 05.006.071 - 05.006.085	Nutmet
SBCM# 05.06.089 - 05.006.091	Crowel David
SBCM# 05.006.132	California Oaks
SBCM# 05.006.163 - 05.006.165	Gibbs
SBCM# 05.006.170 - 05.006.182	Pulte
SBCM# 05.006.183 - 05.006.186	California Oaks
SBCM# 05.006.247 - 05.006.249	Murrieta Horse Ranch

Source: San Bernardino County Museum, September 1992

Pauba Sandstone (early to late Pleistocene, less than 700,000 years before present)

Fossil Pleistocene horse has been reported by Mann (1955) and Kennedy (1977). The faunal assemblage in the study area suggests a late Irvingtonian/early Rancholabrean Land Mammal Age in contrast to the early late Irvingtonian fauna from the Unnamed Sandstone in the California Oaks area. The formation provides an important record of early Rancholabrean taxa which is rarely represented in California. The Pauba Formation to date has yielded at least 24 taxa of fossil vertebrates, some of which is similar to Pleistocene fossils from Rancho La Brea, although the fauna is distinctive and reflects habitats of interior Southern California. This formation is considered to have HIGH potential for containing significant, nonrenewable paleontologic resources. A composite list of taxa for the Pauba Sandstone Formation is shown in Table 3.15-3.

Quaternary Old Alluvium (late Pleistocene, 10,000 years before present)

Fossil horse has been reported from the Quaternary older alluvium northeast of the project area near Lake Skinner. This finding indicates that the formation is conducive to the preservation of fossils. No resource localities in this formation have been recorded for the project area.

Planning Considerations

Consistent with CEQA Guidelines, and the recommendations of the Society of Vertebrate Paleontology, development proposals within the planning area must be evaluated as part of the environmental review process to determine the paleontologic sensitivity of the site. Project sites located within areas of the city designated or known to have high paleontologic sensitivity would require a standard paleontologic resource mitigation program. Such a program would include monitoring and salvage of fossils during site excavation by a qualified paleontologic monitor. The monitor must have the authority to halt or divert equipment. Recovered specimens must be prepared or washed to a point of identification. Mitigation would also include curation of specimens into a museum repository with retrievable storage. Completion of mitigation would occur with approval of a report of findings by the lead agency, acknowledging that the program has mitigated all significant impacts to paleontologic resources.[7]

TABLE 3.15-3
PAUBA FORMATION COMPOSITE TAXA

Mammuthus sp. cf. M. imperator	imperial mammoth
Mammut sp.	mastodon
Camelops sp.	camel
Hemiauchenia sp.	llama
?Antilocapra	pronghorn
Odocoileus sp.	deer
Equus bautistensis	extinct large horse
Equus sp. (sm)	small horse
Smilodon fatalis	sabre-toothed cat
Microtus californicus	vole
Neotoma sp.	wood rat
Peromyscus sp.	deer mouse
Thomomys bottae	pocket gopher
Dipodomys sp.	kangaroo rat
Ammospermophilus sp.	ground squirrel
Sorex sp.	shrew
Sylvilagus sp.	cottontail
Lepus sp.	rabbit
Lampropeltus sp.	king snake
Crotalus sp.	rattlesnake
Clemmys sp.	pond turtle
Bufo sp.	toad
Gila orcutti?	chub fish
Succinea sp.	land snail
Institutional Site Records	
SBCM# 05.006.004 - 05.006.046	Los Alamos
SBCM# 05.006.065	White Wood
SBCM# 05.006.070	Country Walk
SBCM# 05.006.084,.086,.087	Nutmet
SBCM# 05.006.101 - 05.006.103	The Terrace
SBCM# 05.006.163 - 05.006.166	Dane
SBCM# 05.006.235 & 05.006.236	Bedford
SBCM# 05.006.238- 05.006.246	Bedford
SBCM# 05.006.254 & 05.006.255	Bedford
SBCM# 05.006.296	Morrison Homes

Source: San Bernardino County Museum, September 1992

ENDNOTES

1. Cultural Resources Records Search, Eastern Information Center, University of California Riverside, July 29, 1992.

2. Cultural Resource Assessment for the Murrieta Highlands Project, Christopher E. Drover, Ph. D., Consulting Archaeologist, April, 1992.

3. Ibid.

4. Kathleen Springer, Project Manager, San Bernardino County Museum, Earth Sciences Division, written correspondence, February 19, 1992.

5. Ibid.

6. Paleontologic Resources Report for the City of Murrieta, San Bernardino County Museum, Earth Sciences Division, September 3, 1992.

7. Ibid.

REPORT PREPARATION

CHAPTER 4

TRANSPORTATION CONSULTANT

Robert Kahn, John Kain & Associates, Inc.
4101 Birch Street, Suite 100
Newport Beach, California 92660

John M. Kain, Principal, Project Manager
Lee Royalty, Associate Engineer

ENGINEERING CONSULTANT

NBS Lowry
40925 County Center Drive, Suite 120
Temecula, California 92390-6012

J. Matt Brudin, PE, Project Manager

ECONOMIC CONSULTANT

Alfred Gobar Associates
721 Kimberly Avenue
Placentia, CA 92670-6300

Alonzo Pedrin, Project Manager